DOCTORAL THESIS

Navigating postprofessional physical therapist education.

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Navigating Postprofessional Physical Therapist Education

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A thesis submitted to Bond University in fulfilment of the requirements for the degree of

Doctor of Philosophy

at

Bond University in August, 2017

Faculty of Health Sciences and Medicine

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DECLARATION BY AUTHOR

This thesis is submitted to Bond University in fulfilment of the requirements of the degree of Doctor of Philosophy (PhD). I certify that this document represents my own and original work. The conceptualization, development, design, ethics applications, participant recruitment, study implementation, interpretation of the statistical analysis and final write up of these research projects were my own work with the feedback of my committee members and content experts. There were small components of this research that students were involved in under my strict and direct supervision. Students were from the University of Vermont and part of an instructional class to learn basic research skills. Their contribution has been appropriately acknowledged. All workload involvement was scrutinized and approved by the principal supervisor. Learning to supervise research students was discussed with my supervisory team and considered to be an important aspect of my PhD training.

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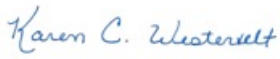

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DECLARATION OF AUTHOR CONTRIBUTION

All co-authors on the chapters/papers indicated below have approved these papers for inclusion in Karen Westervelt's doctoral thesis.

Westervelt, K., Smith, S., Tanych, J., Crane, L., Sibold, J., Hing, W., (2017). Physical Therapist Education Around The Globe: A Need For Greater Understanding, Globalization, And Internationalization. *Poster presented at Combined Sections Meeting of the American Physical Therapy Association, in San Antonio Texas on February 15-18, 2017. The poster presentation won the APTA Global Health Special Interest Group Blue Ribbon Award for Social Responsibility.*

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Platform Presentations

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Poster Presentations

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Let me know about any questions. Thank you for your contribution.

Best wishes.

Kevin & Susan

Co-Editors- Journal of Physical Therapy Education

AUTHOR'S CONFIRMATORY STATEMENTS

The opinions expressed in this study are those of the author and do not necessarily reflect those of Bond University.

The National Statement of Ethical Conduct in Human Research (developed jointly by the National Health and Medical Research Council, Australian Research Council and the Australian Vice Chancellors Committee) has been adhered to during the conduct of this research.

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LIST OF ABBREVIATIONS

ABPTRFE – American Board of Physical Therapy Residency and Fellowship Education

ABPTS – American Board of Physical Therapy Specialties

ACP – Australian College of Physiotherapists

APA – Australian Physiotherapy Association

AUS – Australia

CAPTE – Commission on Accreditation in Physical Therapy Education

DA – Direct Access

DPhty – Doctor of Physiotherapy

DPT – Doctor of Physical Therapy

EBP – Evidence Based Practice

ESP – Extended Scope of Practice

EU – European Union

GMAP – Geographic Map

IFOMPT – International Federation of Orthopaedic Manipulative Physical Therapists

IFSPT – International Federation of Sports Physical Therapists

ISO – International Organization for Standardization

NZ – New Zealand

PhD – Doctor of Philosophy

PI – Principal Investigator

PSFS – Patient-Specific Functional Scale

PT – Physical Therapist or physiotherapist

URL – Universal Resource Locator

US – United States

USA – United States of America

UVM – University of Vermont

WCPT – World Confederation of Physical Therapy

BACKGROUND INFORMATION

Physical therapist education around the globe varies but one aspect is consistent: the need for high quality postprofessional education (Kulig, 2014a; Therapy, 2011). Greater autonomy of the profession has transformed entry-level physical therapist education and fueled the demand for postprofessional education. Navigating the postprofessional system can be a challenge for physical therapists.

These challenges include;

- Great variation exists in entry-level physical therapy qualifications around the world.
- Postprofessional education options for physical therapists vary greatly from weekend courses, to residencies, to clinical specializations, to post graduate diplomas, to fellowships. A lot of variation and confusion exists as to what these programs entail and what is best for the physical therapist.
- Leaders in the profession are advocating for more postprofessional education programs especially University based programs, but little is known about what already exists and what are the specific needs for future programming.
- Physical therapists are required to work in an increasingly global environment. Finding ways to collaborate with our international education partners to prepare future physical therapy specialists to work in an increasingly global environment is important for the advancement of the profession.

In our increasingly global world brought together by ease of travel and communication, we realize that these challenges around postprofessional education are shared by physical therapists globally. The WCPT mission statement is to “unite the profession internationally” and to “facilitate communication and information exchange… among their members”(WCPT, 2013).

The issue of postprofessional education is more than just a local issue, it is a global issue and one that we should address through collaboration with our international education partners. International collaborations benefit the profession nationally and internationally (Holdsworth, Webster, & Rafferty, 2012). Preparing physical therapy specialists to work in an increasingly global environment is essential for the advancement of the profession. There is a paucity of research in this area; therefore, this PhD research is being undertaken to fulfill this need.

Research Aims

The aims of this doctoral research include:

1. To review and analyze current entry-level physical therapist education globally.
2. To review and compare current physical therapist postprofessional education in the USA and Australia.
3. To synthesize the needs for postprofessional physical therapist education in two different geographical regions of the world.
4. To establish and analyze a model international collaboration experience between two well regarded institutions with DPT programs.
5. To evaluate an innovative international advanced clinical decision making mentoring program for novice clinicians.

ABSTRACT

Postprofessional education for physical therapists (also known as physiotherapists) is vitally important. It enables the clinician to gain confidence and satisfaction at work, helps the profession obtain more autonomy with higher educated professionals, and allows for a high quality of care for the client. Despite the agreement that postprofessional education is necessary and important, many obstacles exist that limit access to high quality postprofessional education. Recent trends in Australia (AUS) and the United States of America (USA) are strikingly different and warrant a closer examination. AUS has seen a recent decline in academic postprofessional physical therapy programs, which needs to be better understood as it is detrimental to the profession. The USA has seen a recent surge in interest in residencies and fellowships which also must be examined, as the cost and location of many of these programs make them inaccessible to many. The authors believe that there is much to be learned from our colleagues in the opposite hemisphere. To our knowledge a thorough study and comparison of physical therapy postprofessional education in AUS and the USA has not been conducted.

The aim of this thesis was to examine and compare postprofessional physical therapy education in AUS and the USA, identify the barriers and benefits to postprofessional education today, and propose and test models of postprofessional education that can help advance postprofessional education internationally.

To begin, an in-depth review was conducted of physical therapy education around the globe. It was deemed important to understand current global entry-level programming before study of postprofessional programming could begin. Variations in duration of physical therapy educational programming, as well as number of programs in each country and region of the world, were demonstrated. Variation in number of physical therapy programs per million population was also demonstrated. Despite the variation, encouraging signs could be seen. For example, the World Confederation of Physical Therapist (WCPT) recommends all entry-level physical therapy programs involve four years of university-based education. Our research showed that this recommendation is being met in 64.2% of countries in the world. Striving towards standardization in entry-level education is important for the

profession internationally, and allows for the international study and comparison of postprofessional physical therapist education.

Understanding and centralizing information about entry-level education in the first study led to the second study, an in-depth review of postprofessional physical therapist education. This study narrowed the focus to AUS and the USA. Analysis of this data confirmed the general observation that academic postprofessional physical therapist education programs are on the decline in AUS; currently, they are only located in seven coastal cities, creating educational deserts for those located elsewhere. The USA data revealed that residencies and fellowships are on the rise, but, like AUS, there are also areas in the country that are without programs. Similarities in the two countries existed in regards to focus of areas of study, with interest being greatest in the Musculoskeletal and Sports specialty. However, both countries are perhaps missing an important population need by offering very few to no academic postprofessional programs in geriatrics. This in-depth comparison demonstrates the profound need for international collaboration. By learning from our international colleagues, we can help AUS restore postprofessional programming that is innovative and meets the needs of the professionals and the population, and can also help the USA learn a lesson in history from AUS. Current professionals in the USA who are seeking clinical specialization must get the greater recognition and compensation they need in order to maintain the profession's forward momentum.

These first two studies provided the foundation, i.e. existing educational programming, upon which three action based projects could build. The third study involved researching the providers themselves. Ten years of alumni in the USA and seven years of alumni in AUS from two schools were surveyed. A striking number of similarities were found, despite the fact that participants were being sampled from opposite sides of the world. Ten percent of participants from both schools had already completed a formal postprofessional education program. There was interest in obtaining postprofessional education among most clinicians, with the greatest interest in those with two years or less of clinical practice. Interestingly, both groups were interested in attending their alma mater to gain this additional education; however, both groups wanted a hybrid teaching style and were interested in collaborating internationally for this educational training in order to gain access to colleagues and experts around the world. They specifically were seeking clinical

mentoring. Barriers were also very similar for both groups, with cost and access to quality programming being the top two limiting factors for physical therapists seeking additional education. These findings lead to the formation of the final two studies to examine innovative models of delivery of postprofessional education.

The fourth study was designed to examine a model of international collaboration in physical therapist education in order to better understand the effects on students and educators. A group of physical therapy students and professionals traveled from the University of Vermont to Bond University for a two-week international collaboration in manual physical therapy. Master classes, teaching labs, and social opportunities were held with the combined group. The themes that emerged from long answer survey questions and prompted journaling questions included experiencing the "other", learning, and collaboration. The experience proved beneficial for the traveling students, the hosts, and the teaching faculty. The findings support this model of international collaboration in educational programming and show that benefits exist for all parties from collaborating internationally. Not surprisingly, cost was again determined to be a barrier for this model. Therefore, the final study was designed to address the need for postprofessional education that helps reduce the barriers of cost and access, both of which are known limitations of current models.

The final study in this thesis involved the design and implementation of an online international clinical mentoring program. The model was specifically designed based on the findings of the first four studies. Small groups of novice clinicians from the USA and AUS were paired with clinical experts for online clinical mentoring sessions, which revolved around cases brought to the group by each novice. The video conferencing system allowed for a guided discussion of each case study and provided the novice with the support needed to improve confidence and critical thinking, two critical features of professional growth that are essential to develop during the transition from student to independent, confident, and competent practitioner. Participants found that confidence and critical thinking improved through participation. In addition, the model provided easy access to clinical mentors and to peers at a similar stage of professional development. Participants expressed a great appreciation for the structured design of the model. The experts were also in support of this innovative design, and felt that it was a viable model that will fill a

real need within the profession for more accessible mentoring to support clinicians.

In conclusion, this thesis provides information about physical therapist entry level education and postprofessional education at the programmatic level and at the user level. It clearly identifies concerns and barriers to postprofessional education, and provides practical, useful solutions to issues of cost, accessibility, and the need for greater international collaboration.

Key words: Physiotherapist, postprofessional education, physical therapist, mentoring, confidence, critical thinking, international collaboration, globalization, accessibility, education

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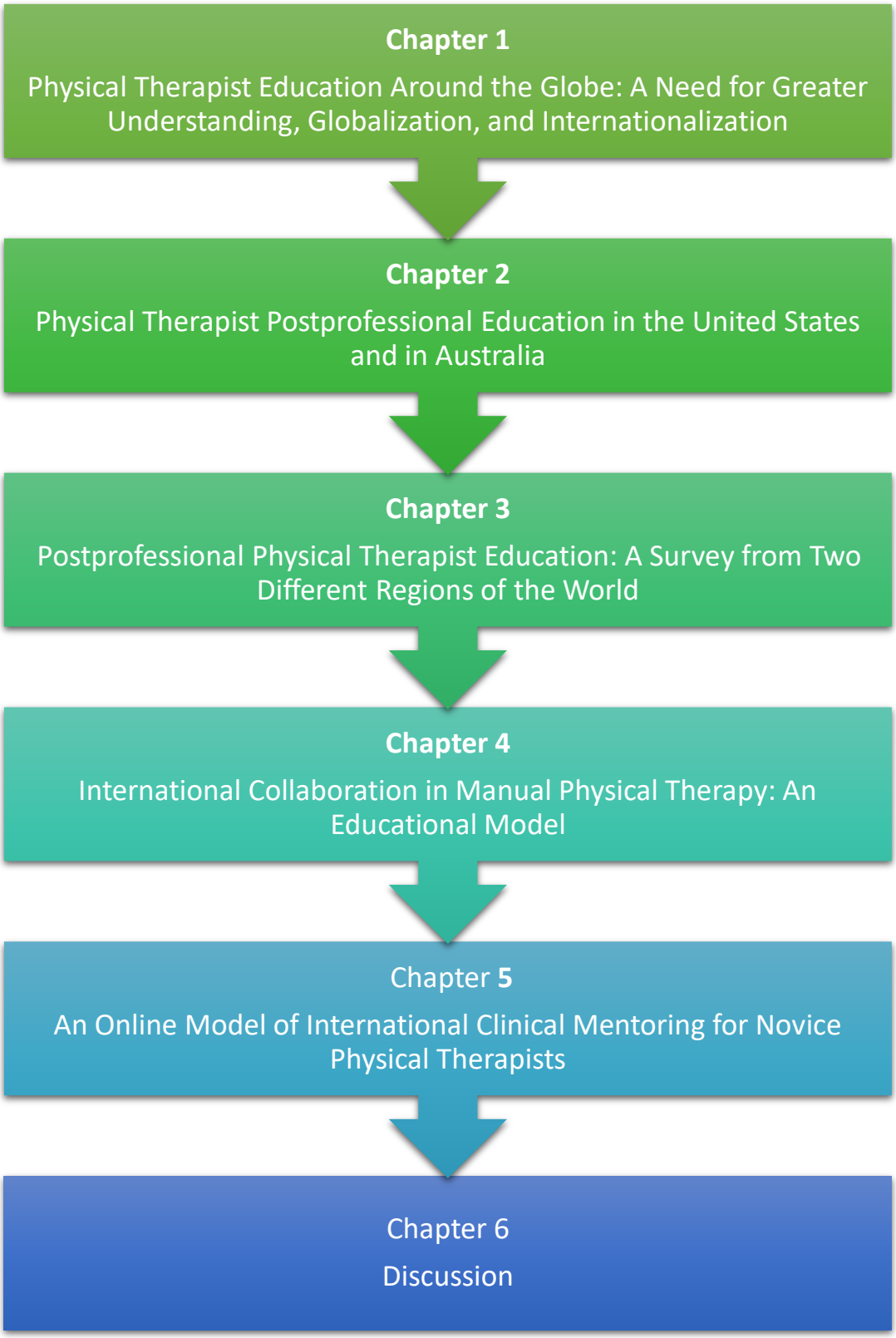

CHAPTER 1.
PHYSICAL THERAPIST EDUCATION AROUND THE GLOBE: A NEED FOR GREATER UNDERSTANDING, GLOBALIZATION, AND INTERNATIONALIZATION

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1.1 Prelude

This chapter provides a review of the literature and an overview of current entry-level physical therapist education around the globe. It is important to first understand entry-level education as it provides the foundation for postprofessional education. Understanding what is currently available provides the foundation for globalization and internationalization in physical therapist education at all levels. This study adds to the body of literature by centralizing and collating information on entry-level physical therapist education worldwide and demonstrating the variation that exists in global physical therapist education today.

1.2 Abstract

Understanding physiotherapist education globally and collaborating with international partners on educational issues is essential in order to advance the profession. However, there is a lack of peer reviewed information on entry-level education that is centralized and easily accessible. Therefore, the main objective of this research was to collate and compare physiotherapist education programmes globally. Data were collected from peer reviewed literature, national websites, and individual academic programmes. Descriptive statistics and maps were generated to compare entry-level physiotherapist programmes. Data collection focused on total number of programmes per country and duration of individual programmes. A total of 64.2% of countries studied met the World Confederation of Physical Therapy recommendation of four or more years of entry-level physiotherapist education. The number of programmes varied in each country, with the greatest number of programmes in the Asia Western Pacific and European Regions, and the least in the Africa region. This study demonstrated variation in physiotherapist education around the globe. By centralizing information regarding programme location and duration, this research supports opportunities for dialogue to occur that can guide globalization of physiotherapist education and advance our profession through international collaboration.

1.3 Introduction

Understanding physiotherapist education globally and collaborating with international partners on educational issues is essential in order to progress the profession in education, research, and clinical practice (Cahalin, Matsuo, Collins, Matsuya, & Caro, 2008). In order to progress the profession around the world, information regarding entry-level education needs to be centralized and easily accessible (Cahalin et al., 2008). Research is needed to provide current information regarding physiotherapist education around the globe.

The World Confederation for Physical Therapy (WCPT) Education Policy calls for standardized entry-level programmes of at least four years of university-based or university-level generalist training for entry-level physiotherapy practice (World Confederation for Physical Therapy, 2015). Although the WCPT has established data regarding the number of physiotherapist education programmes around the world and the degree granted (World Confederation for Physical Therapy, 2015), maintaining currency of this information is difficult and it has not previously been peer reviewed (Cahalin et al., 2008). Therefore, the objectives of this research were to collect current information on physiotherapist education programmes globally in order to examine the number of programmes in each country and each WCPT region, and to compare the duration of these entry-level programmes with each other and with the WCPT recommendations.

Physiotherapist education (entry-level)

The WCPT "recognizes that the education of physical therapists takes place in very diverse social, economic and political environments throughout the world" (World Confederation for Physical Therapy, 2011c) and "acknowledges that there is variation in programme delivery and in entry-level qualifications" (World Confederation for Physical Therapy, 2011c). For example, the United States of America (USA) is a forerunner in the profession-wide change to the entry-level doctorate degree (American Physical Therapy Association, 2015; Chipchase et al., 2006a; Moffat, 2012a). In Australia, there are multiple entry-level degrees including Bachelor of Physiotherapy, Masters of Physiotherapy, and Extended Masters or Doctor of Physiotherapy programmes (Australian Health Practitioner Regulation Agency, 2015). In other areas of the world, the qualifications considered

to be entry-level also differ. Bachelor-level programmes are required in Italy and New Zealand, while in Canada and Belgium, Master's level degrees are required (Moffat, 2012a). Inconsistency of terminology and degree titles contribute to the difficulty in comparing and standardizing physiotherapist education programmes.

Benefits of physiotherapist education standardization

Benefits of physiotherapist education standardization may be achieved through information sharing and international collaboration. These include, but are not limited to, evidence-based practice (Higgs, Kathryn Refshauge, Elizabeth, 2001), reciprocity (International Federation of Orthopaedic Manipulative Physical Therapists, 2013), and autonomous practice (Higgs, Kathryn Refshauge, Elizabeth, 2001).

Evidence-Based Practice: Healthcare professionals, including physiotherapists, are encouraged to use evidence-based practice in which they select interventions based on strong supporting evidence in order to reduce inconsistencies in care and improve patient outcomes (Gupta et al., 2015; Iles & Davidson, 2006). Evidence-based practice aids clinicians in choosing the most effective treatment in terms of cost and quality of intervention while providing guidelines and standards of care which clinicians may reference (Winning et al., 2008). There is a difference in the use of evidence-based practice around the globe that effects the quality of care delivered (Thor, Olsson, & Nordenström, 2016) which results from several factors, including variation in physiotherapist education. Therefore, patients may receive different physiotherapy treatments for the same condition in different regions of the world, which is not ideal. Cahalin et al. states, "…greater knowledge of international physical therapist educational and professional issues will improve quality of service and patient outcomes throughout the world" (Cahalin et al., 2008, p. 345).

Higher-level education that teaches physiotherapists how to best utilize evidence-based practice may in turn improve patient care. One successful example of this model has been demonstrated in Australia. Physiotherapists with higher levels of education, such as master's and doctorates, were more likely to use evidence-based practice as their main treatment basis (Iles & Davidson, 2006). Standardizing entry-level physiotherapy education to at least four years of university-based programming

can improve the average level of training (World Confederation for Physical Therapy, 2011c), and thus improve the implementation of evidence-based practice.

Reciprocity: Standardization of physiotherapist education may allow for greater reciprocity, a mutual agreement (Merriam-Webster, Incorporated, 2015) between two countries to allow physiotherapists the ability to practice freely in both locations. Increased reciprocity can contribute to globalization of the profession. If education is standardized between countries, opportunities for reciprocity are facilitated. This can allow students and professionals to pursue education, research, and practice outside of their home countries (Cahalin et al., 2008) and help emerging professionals to be prepared to work in an increasingly global health care environment. The WCPT's Reciprocity Policy Statement encourages international occupational mobility for physiotherapists (World Confederation for Physical Therapy, n.d.), which in turn may be facilitated by standardized entry-level education programmes around the globe (World Confederation for Physical Therapy, 2015).

Reciprocity has been practiced in some European countries for many years. Swedish trained physiotherapists were able to practice in any of the eight Nordic countries before Sweden joined the European Union in 1995. Beginning in 1995, Swedish physiotherapist education was recognized by all members of the European Union, which expanded opportunities for international collaboration among European nations (Häger-Ross & Sundelin, 2007). The European Union is currently the largest example of reciprocity. In January 2016, the European Professionals Card was developed to help ease the electronic application and unrestricted movement of practicing physiotherapists throughout the European Union (European Commission, 2016). Similarly, New Zealand and Australia are leaders in reciprocity in the Asia Western Pacific region of the world. In May 2015 Australia and New Zealand announced the first bi-national physiotherapy practice threshold statement. Leaders of the profession in both countries agreed to set mutually consistent entry-level practice thresholds for physiotherapy graduates (Physiotherapy Board of Australia, n.d.). These leaders in the profession are preparing physiotherapists to work in an increasingly interdependent environment in the global health care arena.

***Direct Access*:** Direct access/patient self-referral is a model that allows patients to have unrestricted ability to seek care (American Physical Therapy

Association Board of Directors, 2009). Direct access is a top priority for the profession; (Sandstrom, 2006) however, not all physiotherapist education programmes around the globe can prepare graduates for this level of autonomy (Higgs, Kathryn Refshauge, Elizabeth, 2001). The WCPT advocates for physiotherapists around the world to be trained as autonomous practitioners who exemplify professional judgment and action within a direct access setting (World Confederation for Physical Therapy, 2015).

Australia, New Zealand, USA, and others have pioneered the international shift towards direct access (American Physical Therapy Association, 2015a; Chipchase et al., 2006b; Miller, 2015). Australia was the first country to enable direct access to physiotherapists in 1976 (Chipchase et al., 2006a) and as of 1982, New Zealand physiotherapists became primary care health professionals as a result of direct access (Miller, 2015). In the USA, direct access is controlled at the state level. As of 2015, physiotherapists in all 50 states had some form of direct access (American Physical Therapy Association, 2015b). These examples have influenced laws in other countries as well. For example, in 2006, a new health care insurance system was introduced in the Netherlands that allowed direct access to physiotherapists (Swinkels et al., 2014).

Objectives

The five primary objectives of this research were as follows: to identify the variation in physiotherapist education programmes around the world with respect to number of programmes; identify the variation in physiotherapist education programmes around the world with respect to duration of programmes; compare and contrast duration of programmes found worldwide with the WCPT Educational Policy; explore relationships between physiotherapist education programme variation and evidence-based practice, reciprocity, and direct access; and advocate for international collaboration to advance the profession in the areas of evidence-based practice, reciprocity, and direct access.

1.4 Methods

The study design is a historical descriptive study utilizing quantitative methodology (Leslie Gross. Portney & Mary P. Watkins, 2014).

Data Collection

Data were systematically collected from physiotherapist education programmes from members and developing members of the WCPT (see Figure 1). The country of China is not a member of the WCPT, but Hong Kong, the Special Administrative Region of China, is a member. However, information from both were grouped together for data collection. Data was compiled into a master list. Information was deemed usable data if it had been updated on the WCPT website as of 2015. When information had not been updated in 2015, current data was sourced from national physiotherapy associations from the respective country. If current data was not available from these two sources, researchers searched for institutions offering physiotherapist programmes using the search engines Google (Google Inc., 1998) and Yahoo (Yahoo! Inc., 1994). If the exact number of programmes was still uncertain but information had been referenced in peer-reviewed literature, the authors were contacted via email for verification. When all aforementioned sources of data had been exhausted, data was verified by emailing universities with physiotherapy education programmes directly. When various sources provided inconsistent data about the same country, the most recently published information was utilized. Google Translate (Google Inc., 1998) was used to translate data into English when needed (Google Translate, 2016) (see Figure 1). Information presented here was current as of November 1, 2015. Data were then collected on populations in countries from the United Nations (United Nations Department of Economic and Social Affairs, 2015) and were current as of October 12, 2015.

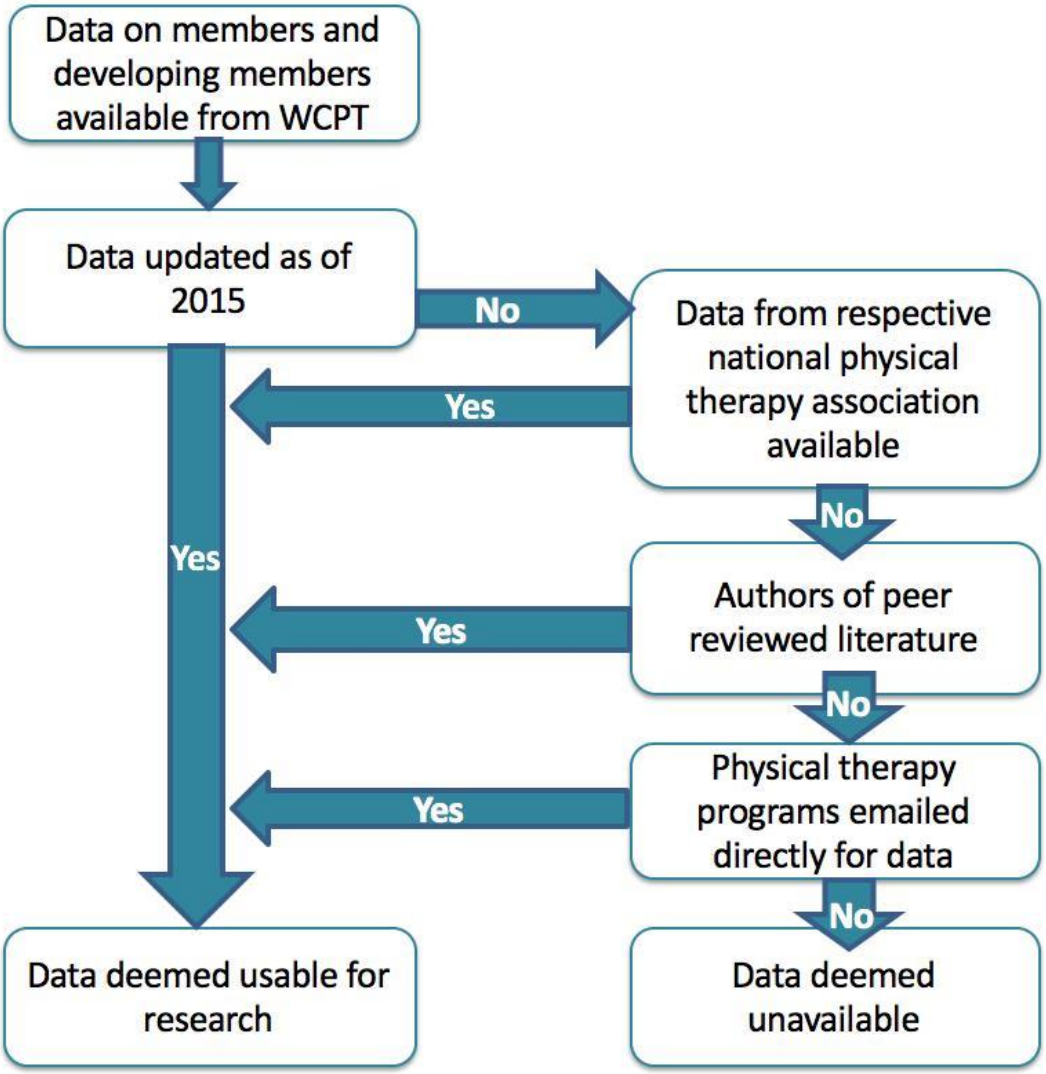

Figure 1.1 **Data Collection**

The same process was followed to determine the length of entry-level physiotherapist training. To account for variability in minimum entry-level degree requirements and name of degree, the number of years of post-secondary education to graduation was recorded. Therefore, the total number of years of schooling was analyzed rather than the name of the degree earned. If a country had multiple degree programmes of varying duration, the majority type of programme was recorded. If there were equal numbers of degree level programmes, the higher level of education was used.

Data Analysis

Once data were collected and final values determined, data were entered into an Excel (Microsoft Excel, 2013) spreadsheet. Data were then analyzed through the geographic map (GMAP) procedure of SAS/GRAPH (SAS Institute, 2015). Maps were generated based on the International Organization for Standardization (ISO) code of the country. Number of entry-level physiotherapist education programmes, full time equivalent years of post-secondary education, and number of physiotherapist programmes per million people were analyzed in this manner. Descriptive statistics were then generated.

Data were also mapped by the WCPT region. Countries were categorized into the five different regions defined by the WCPT; these regions only include countries that are members of the organization. Entry-level physiotherapist programmes by region were mapped as a total number of programmes found in each region. The median number of full time equivalent years of post-secondary education by region was mapped to provide the best representation of education duration for each region. A median was chosen over a mean as it better represents the majority of schooling years for a particular region. Descriptive statistics were then calculated.

1.5 Results

Ninety-three of the 113 WCPT member and developing member organizations examined have entry-level physiotherapist programmes. Of the twenty remaining countries, five had insufficient information as of data collection period and fifteen reported having no physiotherapist programmes currently. The number of entry-level physiotherapist programmes in each country range from 0 to 270 programmes (Figure 2). Of the 108 countries with data available, 3.7% have over 101 entry-level programmes. These countries are Germany, India, Japan and the USA. Figure 3 displays the number of programmes represented per million people of each country's population. In respect to their large population, India is underrepresented in terms of physiotherapist programmes (0.101-0.500 programmes per million people). The USA has 0.500-1.00 programmes per million people, Japan has 1.01-2.00 programmes per million people, and Germany has upwards of 3 programmes per million people. Countries that are the least represented in respect to their populations are Mexico, Iran, and China who all have larger populations and only 0.001-0.100 programmes per million people.

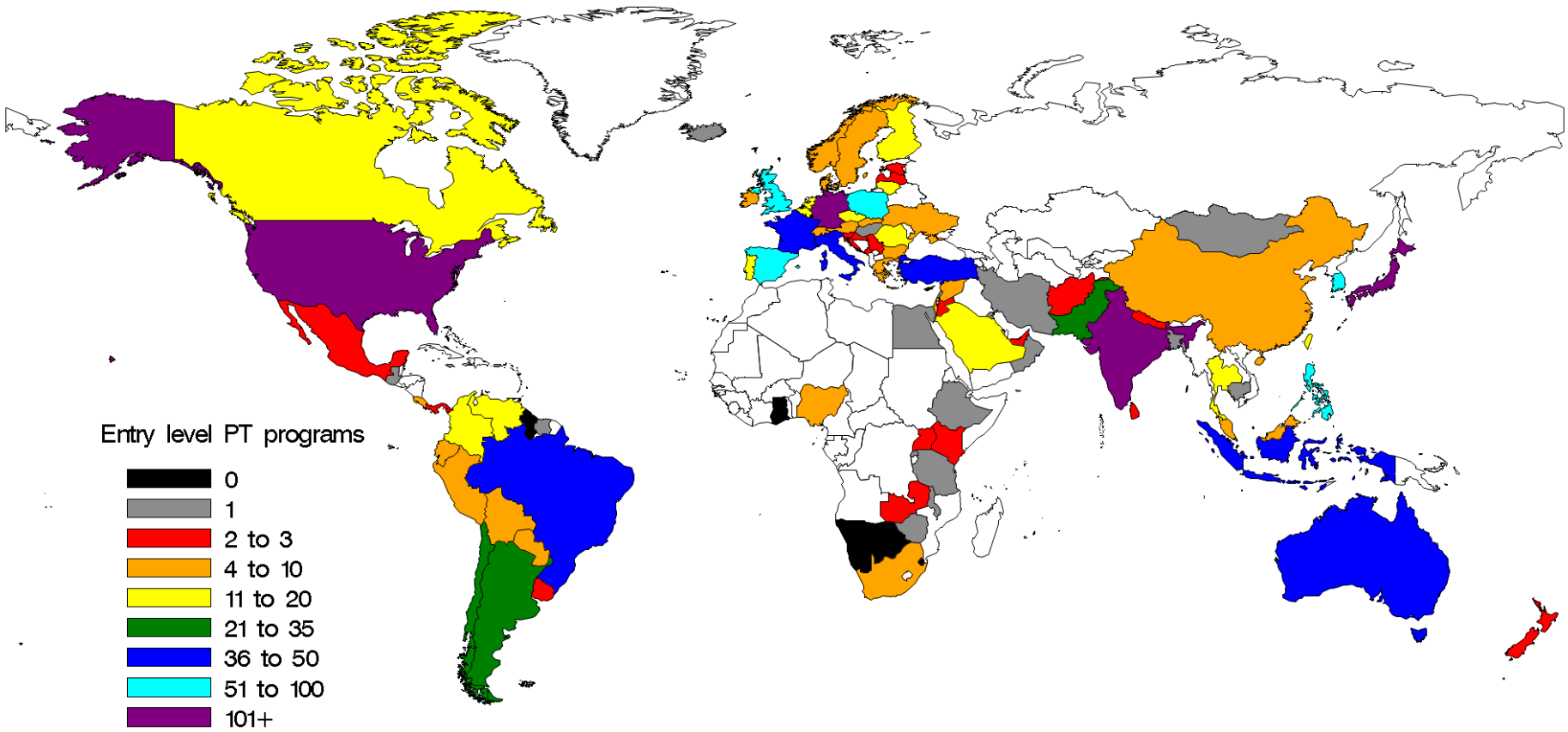

Figure 1.2 **Number of Entry-level PT Programs by Country**
**White represents no data available*

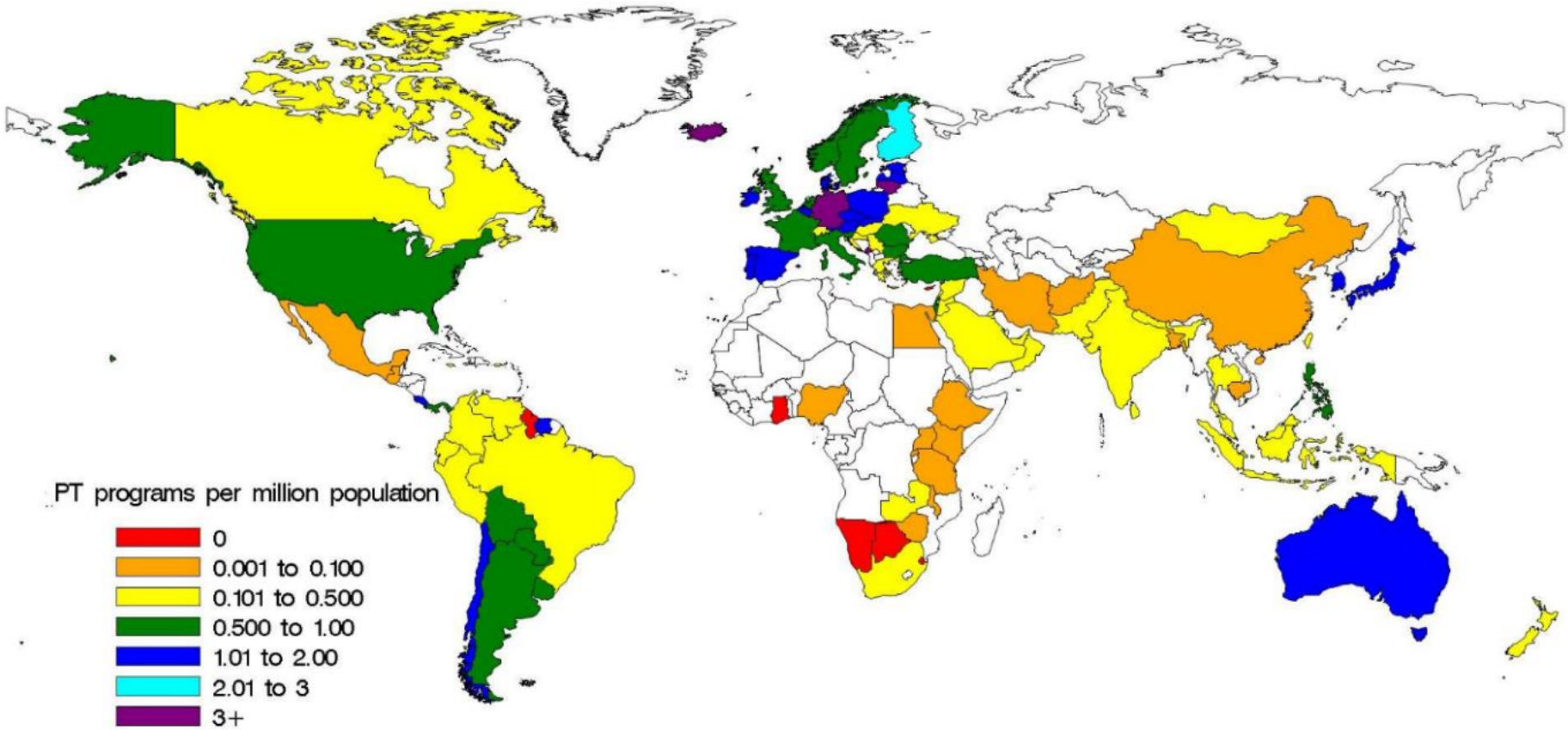

Figure 1.3 **Number of Entry-level PT Programs per Million Population**
**White represents no data available*

The WCPT divides the world into five regions: Africa, Asia Western Pacific, Europe, North America Caribbean and South America. Figure 4 represents the number of entry-level physiotherapist programmes in each of the five WCPT regions. Asia Western Pacific has 776 programmes. India and Japan alone account for 57.60% of the programmes in the Asia Western Pacific region. Europe has 757 programmes, in which Germany contributes the greatest number of programmes at 36.70% (Figure 2). The North America Caribbean region has 254 programmes. The United States accounts for 89.80% of the programmes in the North America Caribbean region. South America has 159 programmes. Africa has the least number of programmes with only 31 programmes in the entire region.

Figure 5 shows the duration, in total full time equivalent years, of post-secondary physiotherapist education by country. Of the 93 countries that have programmes, 3 (3.20%) had no data despite taking every step described above to attain data. The number of years required range from two years to six years. Listed from greatest number of years to least they are: 6 years (1.90%), 5 years (15.10%), 4.5 years (3.80%), 4 years (46.60%), 3.5 years (1.90%), 3 years (20.80%), 2 years (1.90%), 0 years or not available (14.20%).

Figure 6 represents the median number of full time equivalent years of post-secondary education by the WCPT region. Three out of the five regions have a median of 4.00 years of education: Europe, Asia Western Pacific, and Africa. North America Caribbean has a median of 4.25 years and South America has a median of 5.00 years. North America Caribbean has the greatest variation in duration of education, ranging from 2.00 years to 6.00 years. Europe has a range of 2.00 to 5.00 years with the majority (92.40%) of countries requiring either 3.00 (37.10%) or 4.00 (54.30%) years of education. Africa has a range of 2.00 to 5.00 years as well. Asia has a range of 3.00 to 5.00 years. South America has the least variability with programmes ranging from 4.00 to 5.00 years.

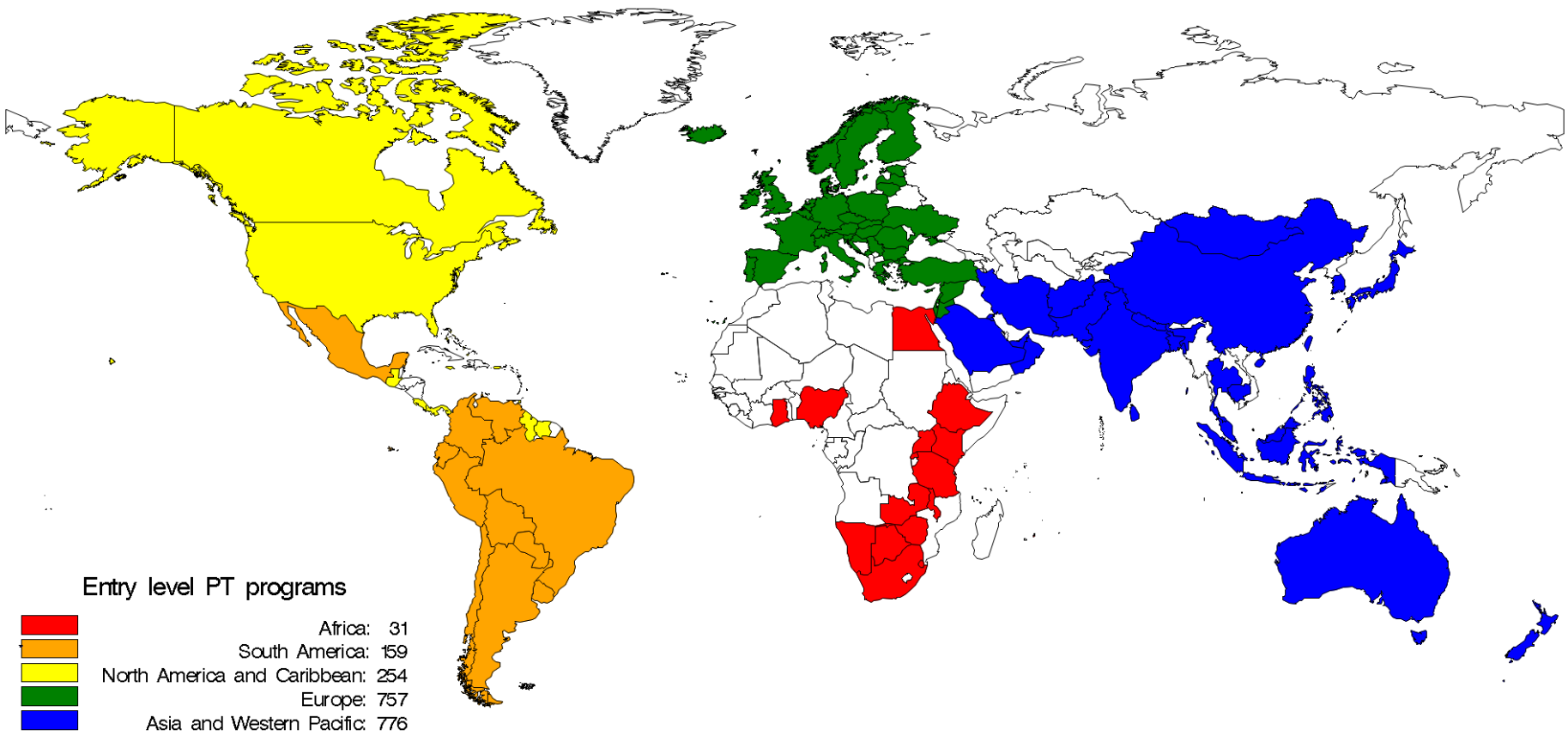

Figure 1.4 **Number of Entry-level Physical Therapy Programs by WCPT Region**
**White represents no data available*

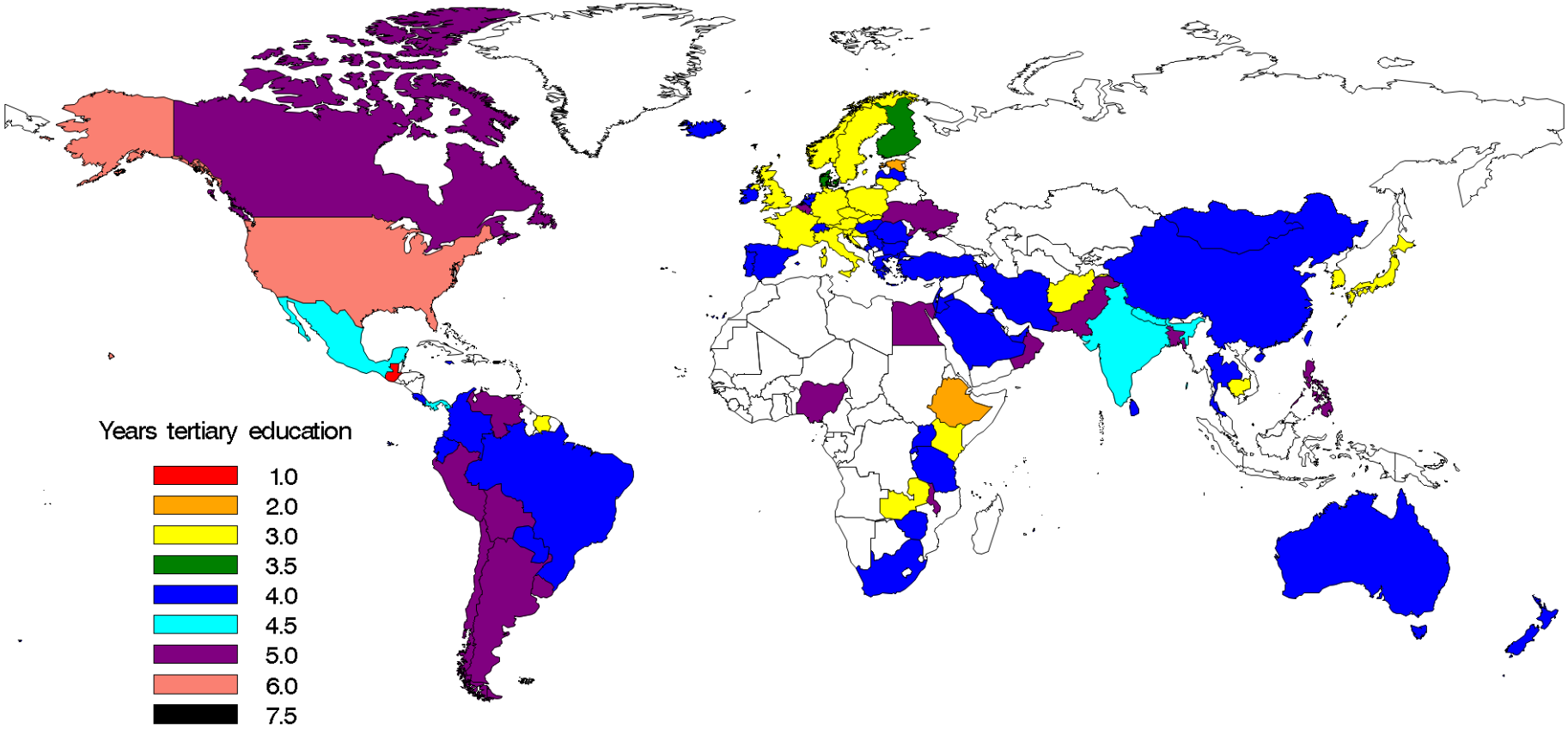

Figure 1.5 **Years of Tertiary Education**
** White represents no data available; scale in number of full time equivalent years*

1.6 Discussion

Variation in number and duration of physiotherapist education programmes worldwide was identified. Centralization of this information provides an opportunity for a dialogue regarding the variation of physiotherapist education programmes worldwide as well as suggested benefits of standardization. Improved globalization of physiotherapist education can help reduce the variation identified and is imperative to the advancement of the profession.

Variation

Of the five WCPT regions, Africa had the fewest number of entry-level programmes and the smallest regional population. Many countries in Africa demonstrated either no data or no programmes to few programmes; therefore, Africa had the greatest need for physiotherapist education programmes, but many obstacles may need to be overcome before new programmes can be established. Africa had both a small number of physiotherapist education programmes coupled with variation in number of post-secondary years of education by country.

The Asia Western Pacific and Europe regions had the most programmes. The Asia Western Pacific region had the greatest variation of all WCPT regions with regards to number of programmes per country, possibly due to the large variations in population per country in this region. The Asia Western Pacific region also had a high degree of variation among the individual countries. For example, Australia and New Zealand had at least four years of education with at least 0.101 programmes per million people, while Japan had three years of education and the most programmes in the region. There was also great variability in the number of physiotherapist education programmes between countries in Europe and the majority of individual programmes did not meet the WCPT four year standardization goal (World Confederation for Physical Therapy, 2011b).

The North American Caribbean and South American regions mostly had at least 0.101 programmes per million or more per region. In the North America Caribbean region, the number of post-secondary years for physiotherapist education programmes was above average. South America was well represented in number of programmes per country and per capita. Countries in this region demonstrated the

greatest length of post-secondary education overall as well as the most consistent number of years per country.

Standardization

When the data were examined by WCPT-defined region, the variation of duration of physiotherapist education programmes was attenuated. The profession of physiotherapy globally appears to have met the WCPT Education Policy of at least four years of post-secondary education (World Confederation for Physical Therapy, 2011b); this is an encouraging step towards standardization of entry-level education.

Evidence-Based Practice: There was ample support for implementation of evidence-based practice in the North America Caribbean and Europe regions; however, policies regarding evidence-based practice were unclear in South America, Africa, and Asia Western Pacific. While there is emerging evidence in support of evidence-based practice (Cahalin et al., 2008; Gupta et al., 2015; Iles & Davidson, 2006; Thor et al., 2016; Winning et al., 2008), it is not implemented universally. For example, physiotherapists in Brazil report difficulty obtaining full-text articles as well as difficulty due to the language barrier of these sources (Silva et al., 2015). Countries such as Brazil can collaborate with and learn from countries such as Australia that have successfully utilized evidence-based practice (Iles & Davidson, 2006).

The physiotherapy profession can also learn from other healthcare professions. A recent study of physicians found that once the physician understood the benefits of critically appraised topics, he or she would be more apt to utilize that knowledge in patient care. This suggested that awareness of, exposure to, and training in how to disseminate the literature may aid in eliminating some barriers to implementing evidence-based practice (Thor et al., 2016). This knowledge supports the idea that the implementation of evidence-based practice throughout quality four-year university-based physiotherapy curriculums could help promote evidence-based practice when clinicians enter the field.

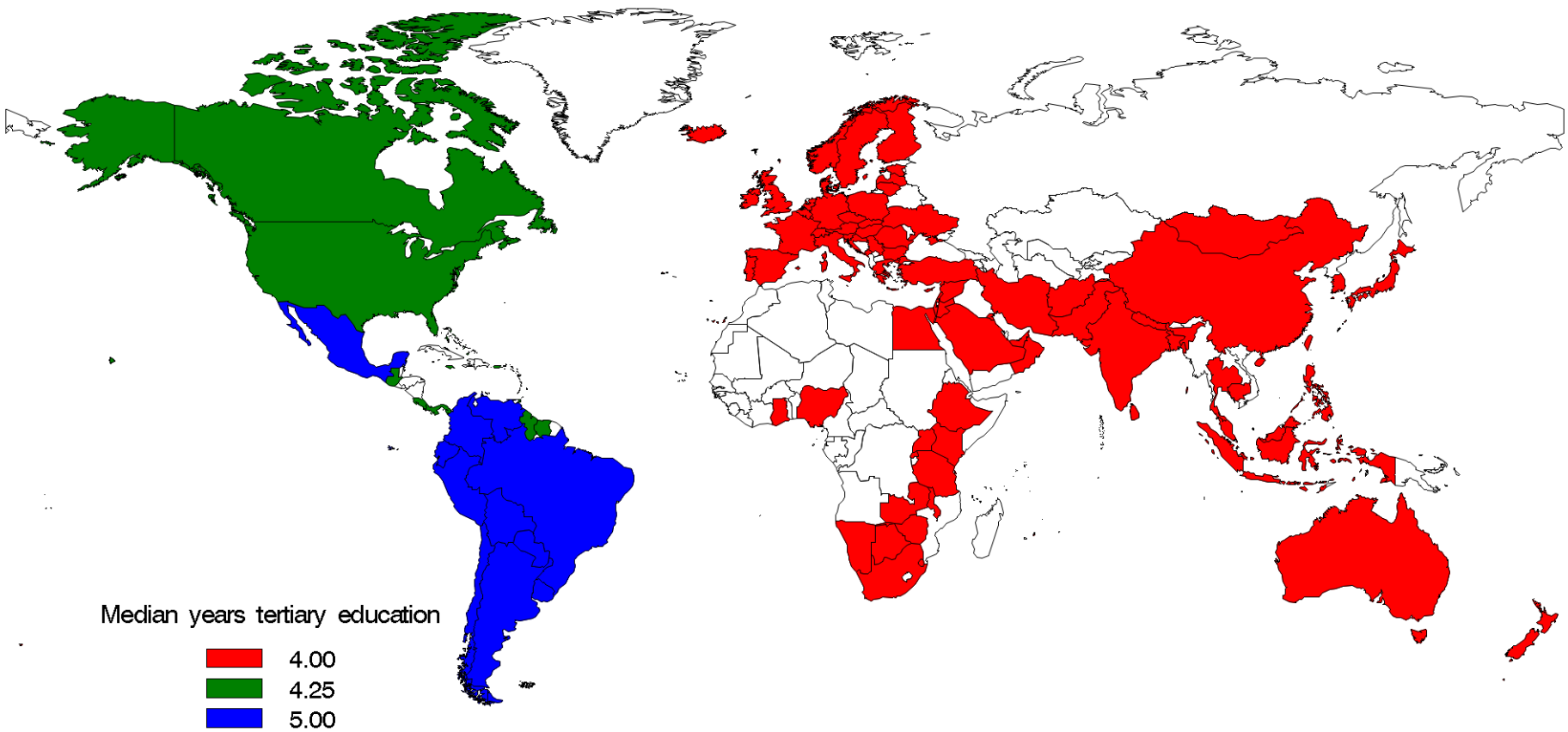

Figure 1.6 **Median Number of Full Time Equivalent Years of Tertiary Education by Region**
**White represents no data available*

Direct Access: The availability of direct access in a region can be used as a measure of autonomous practice (World Confederation for Physical Therapy, 2011a). There was a lack of evidence on the availability of direct access in South America and in most of the Asia Western Pacific region with the exception of Thailand, Australia, and New Zealand, which had direct access available in both the public (government funded) and private sectors (private insurance or privately funded) (Bury & Stokes, 2013). Africa had direct access, in all countries with available data, in the private sector. For most countries in Europe, direct access was also available in the private sector. The majority of countries in the North American Caribbean region had direct access at least in the private sector (Bury & Stokes, 2013) and, in the USA, physiotherapists had some form of direct access in every state (but could not always take full advantage of it due to some insurance regulations still requiring a physician's referral) (Mintken, Pascoe, Barsch, & Cleland, 2015).

The feasibility of direct access was tested in Scotland and it was found that those patients who self-referred tended to have shorter symptom duration, decreased symptom severity, less time absent from work, and less time spent at the physiotherapy clinic (Holdsworth & Webster, 2004). A ten-year study was conducted to examine the use of direct access at an orthopedic clinic in the USA (Mintken et al., 2015). Results demonstrated that clinicians used sound clinical judgment, made appropriate decisions, did not miss any serious medical pathologies, and had no malpractice claims. This research helped to validate the USA's nationwide implementation of direct access.

Countries such as Australia and New Zealand have been successful at implementing and utilizing direct access since 1976 and 1982, respectively (Chipchase et al., 2006a). Countries with direct access need to support countries without it and encourage the implementation of direct access principles into curriculums as education is typically ahead of legislation. For example, the Commission on Accreditation in Physical Therapy Education has supported education on diagnostic imaging within the entry-level curriculum with the transition to the DPT (Donley, 2016); however, it was not until April 2016 that Wisconsin became the first USA state to grant physiotherapists the ability to order radiographic images (APTA, 2016).

Reciprocity: Many physiotherapists desire international connections with colleagues and a better understanding of their profession on a global scale (Lattanzi & Pechak, 2012a) which can best be gained by working in a different country. It is often a long and arduous process to gain licensure in another country; however, emerging models such as the European Union Professionals Card are leading to greater ease of reciprocity ("New European Professional Card helps professionals work throughout the EU," 2016). The standardization of entry-level physiotherapist education in the eight Nordic countries of Europe has facilitated reciprocity in the Europe region (Häger-Ross & Sundelin, 2007). Standardizing physiotherapist education programmes would speed up global reciprocity and lead to better international mobility.

Collaboration

Many obstacles including language barriers and variation in minimum required academic degrees make it challenging to compare entry-level physiotherapist education around the world. Forming international collaborations can improve the understanding of all aspects of physiotherapist education and further advances in the profession by strengthening physiotherapy clinical practice and research (Cahalin et al., 2008).

To assist in the standardization of physiotherapist education worldwide, regions that meet the WCPT recommendations on reciprocity and autonomous practice, as well as those that have good evidence of evidence-based practice implementation, should collaborate with those regions that lack these benefits. Through the collaboration of countries on standardization of physiotherapist education as well as the benefits that follow standardization, the physiotherapy profession will advance in today's global health care environment.

Limitations

Potential limitations of this project include the difficulty obtaining accurate information related to issues including (but not limited to) language barriers, terminology used to describe levels of education, lack of updated information in peer reviewed literature, differences in academic calendars, and lack of available data overall. Access to information was the main concern, but it contributed to the interest

in pursuing this type of project. The authors recognize there may have been updates since the information was gathered. The authors acknowledge that some information may have been interpreted differently than the country of origin intended.
In light of these limitations, the results add to the body of literature by reporting on the breadth of physiotherapist education worldwide, the variation that exists in all aspects, and the need to advance our profession through international collaboration.

Additional Research

Additional research is needed specifically in the areas of standardizing the quality of entry-level programmes, evidence-based practice implementation, autonomous practice, and reciprocity around the world. Future research should also focus on the benefits and mechanisms of international collaboration between physiotherapist education programmes worldwide.

1.7 Conclusion

Variability exists in number of physiotherapist education programmes and duration of individual programmes globally. The WCPT goal of standardizing physiotherapist education programmes to at least four years has been met by all WCPT regions, but not by all countries. The information provided supports further dialogue regarding globalization of physiotherapist education and serves as the first step in the standardization of entry-level physiotherapist education programmes. Standardizing the quality of education programmes must be the next step in advancing evidence-based practice, autonomous practice, and reciprocity. This research study centralizes information regarding physiotherapist education globally and can help generate a dialogue. Through this information sharing and international collaboration, the physiotherapy profession can reduce the variation in physiotherapist education to prepare professionals to enter a truly global health care arena.

1.8 References

References for this study can be found in the full reference list in chapter 7 of this thesis.

1.9 Manuscript Status

A poster of this work was presented at the American Physical Therapy Association Combined Sections Meeting in February 2017 in Texas, USA.

A poster of this work was presented at the Zeigler Research Forum at the University of Vermont May 2016. (Appendix 1)

CHAPTER 2.
PHYSICAL THERAPIST POSTPROFESSIONAL EDUCATION IN THE UNITED STATES AND IN AUSTRALIA

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2.1 Prelude

This chapter provides a review of the literature and an overview of postprofessional physical therapy education in the United States and in Australia. In so doing it provides information for a needs assessment by identifying educational deserts, geographic regions in each country without postprofessional educational opportunities. It also identifies specialization areas of need. Most interestingly, this research provides a comparison of postprofessional educational systems in USA and AUS and creates an opportunity for dialogue regarding lessons learned from each of these leaders in postprofessional education. It also creates a foundation for internationalization of postprofessional physical therapist education.

2.2 Abstract

Background: In line with policy recommendations from the World Confederation of Physical Therapy, Australia (AUS) and the United States (USA) actively promote postprofessional physical therapist education. Although postprofessional education pathways vary, the goal of educating specialists within the profession is shared.

Objectives: In order to advance education, and ultimately the profession, it is necessary to understand what is offered for postprofessional programs. Therefore, this study aimed to investigate and compare physical therapist postprofessional education in two regions of the world.

Methods: Data were collected from relevant professional organizations, electronic media, and academic programs. Descriptive statistics were generated to compare postprofessional programs in AUS and USA.

Major Findings: Variation was demonstrated in postprofessional education between both countries. Notably, the number of programs was observed to be growing in the USA, but declining in AUS, where six programs closed during data collection. AUS offered 41 postprofessional programs, while the USA offered 242 residency, and 49 fellowship, programs. USA and AUS had the most programs in musculoskeletal / sports, 42.6% and 24.4% respectively. Conversely, geriatrics comprised only 7.4% of USA residence programs and 0% of AUS clinical academic programs.

Conclusion: This research compared postprofessional education in AUS and USA and demonstrated universal issues related to accessibility and programming. The declining number of programs in AUS is of great concern and warrants evaluation of postprofessional education globally. Educators need to ensure that postprofessional education is accessible, innovative, meets the population needs. This research demonstrates opportunities for international collaboration within the physical therapy profession to advance education and ultimately the profession.

2.3 Introduction

In line with policy recommendations from the World Confederation of Physical Therapy (WCPT) (World Confederation of Physical Therapy, 2011b), Australia (AUS) and the United States (USA) promote postprofessional physical therapist (PT) education (American Physical Therapy Association, 2015a; Chipchase et al., 2006c; Moffat, 2012b; Trott P & Gull G, 2010a). The pathways of postprofessional education vary globally; however, the goal of generating a group of clinical experts within the profession that have advanced knowledge and skills is shared. Postprofessional education programs transform general practitioners into specialists who often lead advances in PT education and research (Fazey, 2015a). PT postprofessional education is in a state of rapid change; therefore, in order to promote advances in postprofessional physical therapist education, and ultimately the profession, we first need to understand what is offered for postprofessional programs in different countries. Understanding PT education globally and collaborating with international partners on educational issues is essential in order to progress the profession in education, research, and clinical practice (Cahalin et al., 2008). Therefore, the aim of this research was to investigate postprofessional PT education in two comparative regions of the world.

Postprofessional education in AUS

Australia recognized its first specialist physiotherapist (PT) in 1983 (Carr & Shepherd, 1996; Trott P & Gull G, 2010a). Currently, there is a 3 tier system to reach Specialist in AUS that is offered and promoted by the Australian Physiotherapy Association (APA) and the Australian College of Physiotherapy (ACP) and requires membership in the APA. In 2016, approximately 76% of registered PTs in Australia were members of the APA (Australian Physiotherapy Association, 2017a; Australian Health Practitioner Regulation Agency, n.d.). Tier 1 is attained by graduating from an accredited entry-level program and Tier 2, by becoming a Titled Member of the APA. Tier 3 is to become a Specialist and a Fellow of the ACP. A PT desiring to become Titled must choose between 2 primary pathways: 1) an academic pathway, which involves completion of an APA approved master's course and at least 2 years clinical experience, or 2) the experiential pathway, which involves at least 5 years of clinical practice, with 3 of those years in the area of interest, 20 hours of continuing

professional development in the area of interest within the year prior to sitting the exams, and passing of a written exam and a practical exam. The PT can then elect for more education to attain Tier 3 and become a 'Specialist Physiotherapist' and a Fellow of the ACP. This involves 2 additional years of training facilitated by a Fellow of the ACP, followed by passing of an oral and practical exam (Australian Physiotherapy Association, 2016b).

Career pathways towards specialization are promoted by the APA and specialization is awarded by the ACP (Australian College of Physiotherapists, n.d.). Today, AUS recognizes 8 areas of specialization including: cardiorespiratory, continence and women's health, gerontology, musculoskeletal, neurology, occupational health, pediatrics, and sports (Australian College of Physiotherapists, n.d.). In 2017, there were 148 Specialist Physiotherapists in AUS (Australian College of Physiotherapists, n.d.). Postprofessional education is offered in AUS in the form of postgraduate certificates, postgraduate diplomas, master's degrees, and Doctor of Philosophy programs. Fellowships are also available, but they are designed and established individually, and coordinated through the ACP. All of these programs strive to provide high quality education in order to meet the work force need for more PT specialists (Australian Government Department of Health, n.d.). Despite Australia's international reputation as a leader in postprofessional PT education there has been a decline in the number of Australian's attending these programs 'potentially compromising the ongoing development and advancement of the profession.'(Jull, G & O'Sullivan, P, 2006, p. 75)

Postprofessional education in USA

The USA recognized its first specialist in 1985.(American Board of Physical Therapy Specialists, n.d.) The term 'Specialist' in the USA is not awarded at the Fellow level as it is in AUS, but can be equated to the AUS Titled level. There are 2 routes to becoming a certified clinical specialist in the USA: 1) the residency route, which involves completion of a 12-18 month accredited clinical residency within the specialty area followed by a written examination and 22) the experiential route which involves 2000 hours of patient care in the specialty area followed by a written examination (American Board of Physical Therapy Specialists, 2016). An individual interested in further education can then go onto a narrower focus of study in a fellowship program.

The ABPTS recognizes 8 areas of specialization: cardiovascular and pulmonary, clinical electrophysiology, geriatrics, neurology, orthopaedics, pediatrics, sports, and women's health. American Board of Physical Therapy Residency and Fellowship Education (ABPTRFE) is responsible for accrediting residency and fellowship programs (American Board of Physical Therapy Residency and Education, n.d.). As of June 2016 there were 20,144 Board Certified Clinical Specialists in the USA (American Board of Physical Therapy Specialists, 2015a). For the past several years there have been more qualified applicants than spaces in residency and fellowship programs. This has caused a surge in the number of developing programs in an attempt to meet the growing demand (Kendra L. Harrington, PT, DPT, MS, WSC; email communication March 24, 2015 and July 26, 2016) and has resulted in the USA being at a '"critical period" in residency and fellowship education' (Furze, Tichenor, Fisher, Jensen, & Rapport, 2016, p. 950).

2.4 Objectives

According to Cahalin et al in 2008, 'A better understanding of worldwide physical therapy educational and professional issues may strengthen physical therapy practice, education, and research around the globe (Cahalin et al., 2008, p. 344). Due to the lack of published information in this area, this research was undertaken to collate information on available postprofessional programs in USA and AUS and to establish a comparative analysis. Therefore, the objectives of this research project were: (1) to identify the number of postprofessional education programs in both the USA and AUS; (2) to identify the location of postprofessional education programs in both the USA and AUS; (3) to identify the specialty areas of postprofessional education programs in both the USA and AUS; (4) to examine trends in postprofessional PT education in 2 different regions of the world; (5) to advocate for international collaboration and dialogue to promote postprofessional PT education and advances within the profession globally.

2.5 Methods

The research design is a historical descriptive study utilizing quantitative methods (Leslie Gross. Portney & Mary P. Watkins, 2014). AUS and USA were selected to study because both countries: promote the WCPT Education Policy for postprofessional education (World Confederation of Physical Therapy, 2011b), have

high-quality of entry-level education, have a large number of PTs (30,004 registered in AUS (Australian Health Practitioner Regulation Agency, n.d.) and 202,444 licensed in the USA as of Dec 2016(American Physical Therapy Association, 2015), have postprofessional continuing education requirements, are considered among the forerunners in postprofessional PT education (Chipchase et al., 2006c; Moffat, 2012b), and are English speaking.

Data collection

Information on postprofessional programs in AUS provided by the Queensland Government in collaboration with Council of Physiotherapy Deans Australia and New Zealand (CPDANZ) was examined (Queensland Government and CPDANZ, 2015). Information was current as of August 13, 2015. This information was then confirmed and/or updated via email communication with all the relevant Australian universities. Information was updated as of February 2, 2016. Program specialty was categorized based on provided information from the aforementioned sources. Location of program was reported for the main campus of program.

Similarly, data were first collected on residency and fellowship programs in the USA from the ABPTRFE directory of programs found on the ABPTRFE webpage.(McNally, n.d.) Data were collected from each program's profile. If the data was incomplete, the listed program director was emailed to verify questionable data or provide information to complete the data set.

Data Analysis

Data were entered into an Excel spreadsheet (*Microsoft Excel*; 2013) and analyzed through the GMAP procedure of SAS/Graph software (version 9.4) part of the SAS System for Windows (SAS Institute 2010, Cary, NC). Maps were generated of both the USA and AUS to represent the different levels of education each country offered. Programs were plotted based on their county ID code in the USA or city code for AUS. A key code was created to account for program specialty. Program specialty was categorized based on provided information from source. Descriptive statistics were then calculated and comparative analysis completed.

2.6 Major Findings

Postprofessional Programs AUS

As of March 2016, there were 41 postprofessional degree programs offered in AUS. The degrees offered include clinical master's, graduate certificates and graduate diplomas. Fellowships, research master's and PhD programs were excluded from this research since these do not have comparable pathways specialization in the USA. Clinical academic program areas identified included: musculoskeletal/ sports, neurology/rehabilitation, clinical education, women's health, burn and trauma, pediatrics and other, with 'other' consisting of rural health practice, international primary healthcare practice, and advanced clinical practice. Figure 1 displays the location of these 41 programs as well as the area of study. Lists of these programs by location are displayed in Table 1. Within the six months of data collection, five master's programs and one short course closed.

Of the 41 postprofessional education programs available in AUS, 48.8% (20/41) of the programs are at the Master's degree level. Graduate Certificate programs represent 34.1% (14/41) of programs. Graduate Diplomas represent 17.1% (7/41) of programs. The most prevalent area of study offered is musculoskeletal/sports at 24.4% (10/41). The second most prevalent area of study is neurology/rehabilitation representing 22% (9/41). The remaining programs listed by descending order of prevalence include 'other' at 7/41, clinical education with 6/41, burn and trauma and women's health each with 3/41 programs, and pediatrics with 2/41 programs.

Seven different cities (Adelaide, Brisbane, Canberra, Gold Coast, Melbourne, Townville, and Perth) located in 5 of the federated states were mapped out to display the location of programs offered in Figure 1. The majority of programs can be found in Melbourne which represents 24.4% (10/41) of programs. Brisbane offers 22% (9/41) of programs and Perth offers 19.5% (8/41) of programs. The remaining four cities offer a range of 5 to 2 programs: Adelaide (5/41), Gold Coast (4/41), Townsville (3/41) and Canberra (2/41). There are no programs in the 2 mainland territories or in the State of Tasmania.

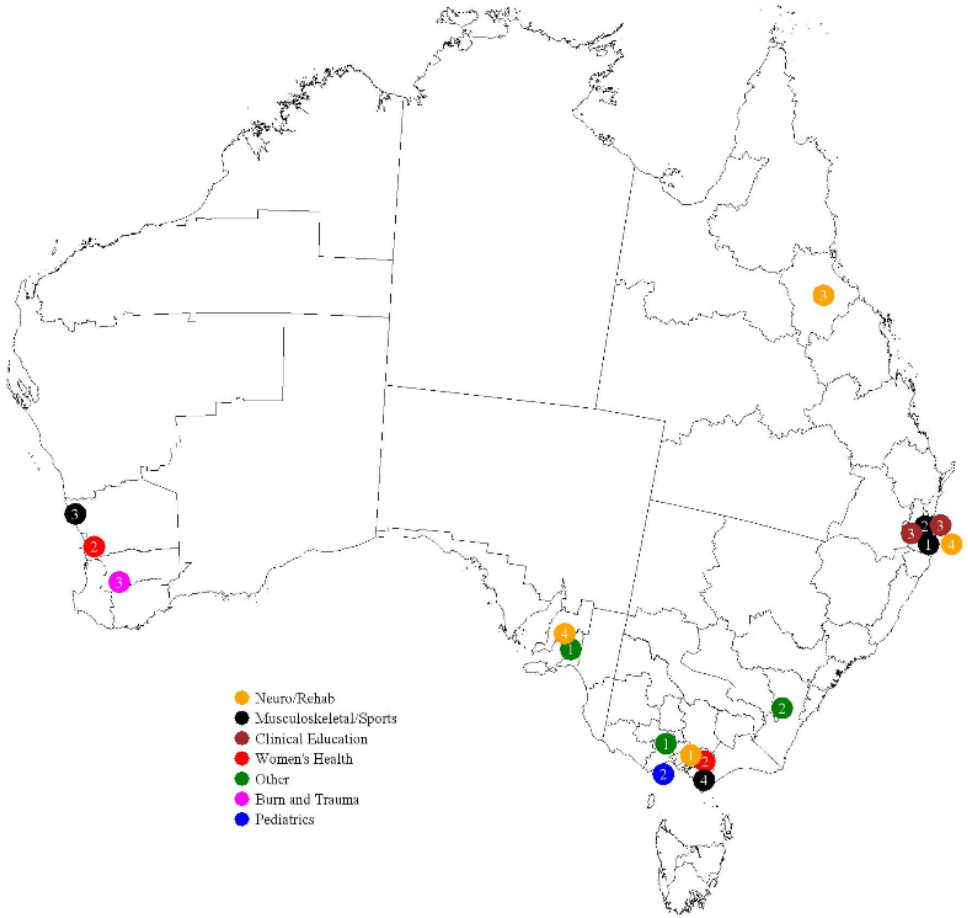

Figure 2.1 **AUS Postprofessional Education Programs**

Table 2.1

AUS Postprofessional Programs

City	Mskl/ Sports*	Neuro/ Rehab*	Pedia-trics*	Women's Health*	Gerontology*	Occupa-tional Health*	Cardio/ pulmonary *	Burn & Trauma	Clinical Education	Other
Adelaide		1								4
Brisbane	2	4							3	
Canberra										2
Gold Coast	1								3	
Melbourne	4	1	2	2						1
Townsville		3								
Perth	3			2				3		
Total	**10**	**9**	**2**	**4**	**0**	**0**	**0**	**3**	**6**	**7**

**Represents areas of specialization promoted by the APA*

Postprofessional Residency Programs in the USA

Postprofessional programs in the USA include residencies and fellowships. PhD programs were again excluded. As of November 2015, there were 242 residency programs in the United States. Residency programs were offered in 10 areas of specialization: acute care, cardiopulmonology, clinical electrophysiology, geriatrics, neurology, orthopaedics, pediatrics, sports, women's health and wound care. Figure 2 displays the location of each residency program by county and the type of program offered. The programs are listed by location/state in Table 2. The distribution of specialization areas for residences can be seen in Table 3.

Figure 2 shows the distributions of residencies by locations/states. Five states had 42.1% (102/242) of the residency programs. These states were California (25), Pennsylvania (22), Texas (19), Florida (19) and Ohio (17). There were 17 states without a program.

Postprofessional Fellowship Programs in the USA

As of November 2015, there were 49 fellowship programs in the United States. Fellowship programs in Orthopaedic Manual Physical Therapy account for the majority of the programs at (30/49) 61.2% of total fellowship programs available. The following fellowships were also available in the order of prevalence: Spine (4/49), Critical Care (3/49), Sports Division I (3/49), Upper Extremity Athlete (3/49), Neonatology (2/49), Hand Therapy (2/49), Education Leadership (1/49), and Movement Science (1/49). The location of the 49 fellowships by county and specialization are shown in Figure 3. This information is listed by state in Table 4. Only 23 states had fellowship programs. 30.6% of all programs offered could be found in just 3 states. New York offered 6, California offered 5 and Texas offered 4 fellowship programs. More than half the states in the USA, 28 states, did not offer a fellowship program.

Table 2.2

USA Residency Programs

State	Acute Care	Cardio-pulm*	Clinical Electro*	Geriatrics*	Neurology*	Orthopaedics*	Pediatrics*	Sports*	Women's Health*	Wound Care
Arkansas							1			
Arizona				1	2	4		1		
California				1	6	15	1	2		
Colorado						2	1			
Connecticut				2		1				
District of Columbia								1	1	
Delaware				1		2		2		
Florida				3	3	7	2	2	1	
Georgia		1			2	5	1	1		
Iowa						1				
Idaho								1		
Illinois						6	1		1	
Indiana						1		1		
Kentucky					2	2		1		
Louisiana					1	2				1
Massachusetts		1			1	1	1	1	1	
Maryland	1				1	2	2	1		
Michigan		1			1	3	1			
Minnesota				1		2			1	
Missouri						1			1	
Mississippi					1			1		

Table 2.2 Continued

State	Acute Care	Cardio-pulm*	Clinical Electro*	Geriatrics*	Neurology*	Orthopaedics*	Pediatrics*	Sports*	Women's Health*	Wound Care
North Carolina		1		1		3	2	1	1	
North Dakota						1		1		
Nebraska				1	1	1	2			
New Jersey				1	1					
New York					2	5		2		
Ohio				3	1	6	3	4		
Oregon						2	1			
Pennsylvania			1	1	3	9	2	3	2	
South Carolina					1	2		1		
Tennessee				1	3	3	1	3	1	
Texas				1	3	4	6			
Utah					1	1				
Virginia					1	2		3		
Washington					1	4		1		
Wisconsin		1			1	3	2			
Total	**1**	**5**	**1**	**18**	**39**	**103**	**30**	**34**	**10**	**1**

**Represents ABPTS recognized areas of specialization*

Table 2.3

USA Residencies by Area of Specialization

Area of Specialization	Percent of Programs (Number/Total)
Orthopaedics	42.6% (103/242)
Neurology	16.1% (39/242)
Sports	14.0% (34/242)
Pediatrics	12.4% (30/242)
Geriatrics	7.4% (18/242)
Women's Health	4.1% (10/242)
Cardopulmonology	2.0% (5/242)
Acute Care	.04% (1/242)
Clinical Electrophysiology	.04% (1/242)
Wound Care	.04% (1/242)

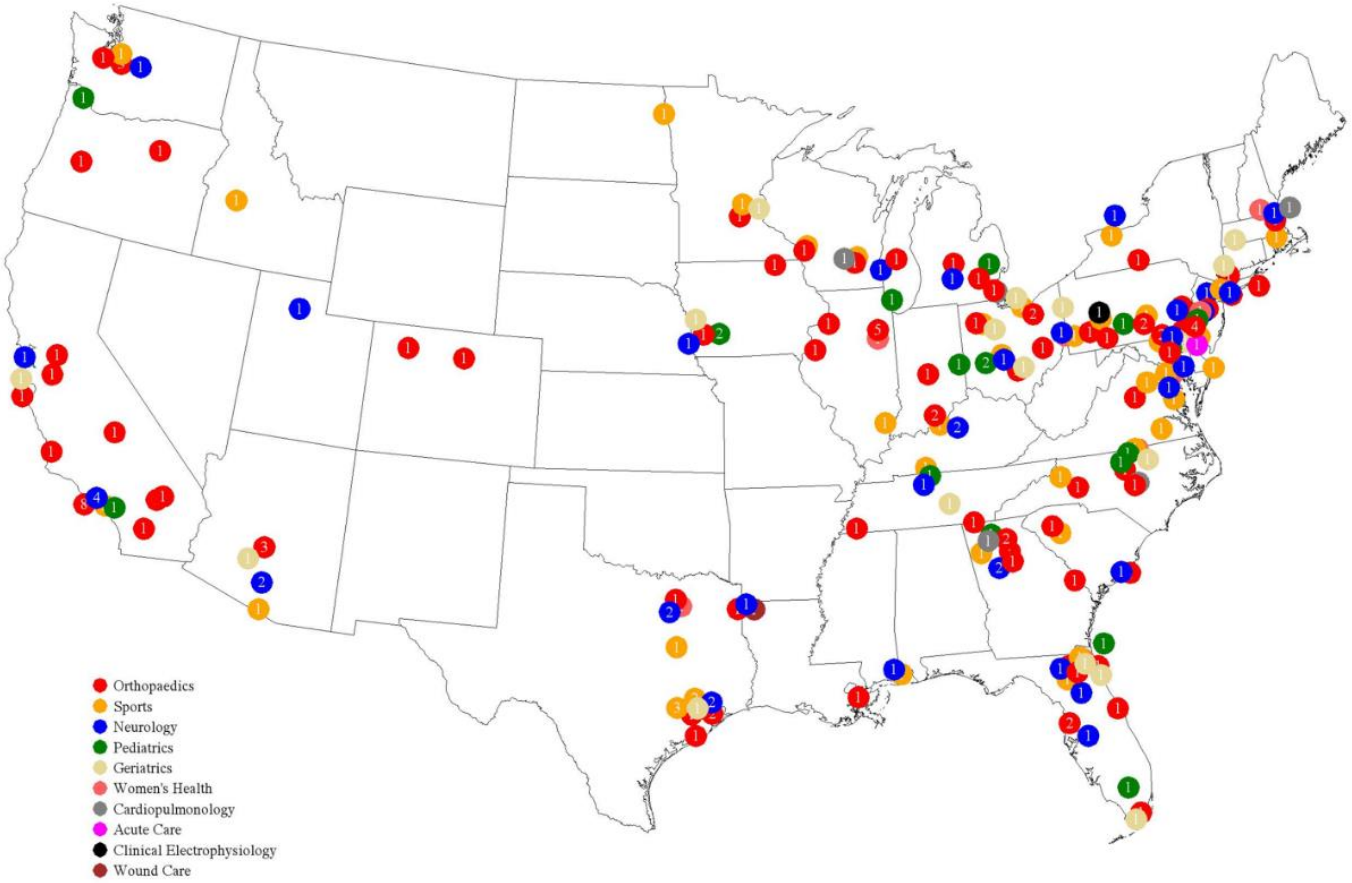

Figure 2.2 **USA Residencies**

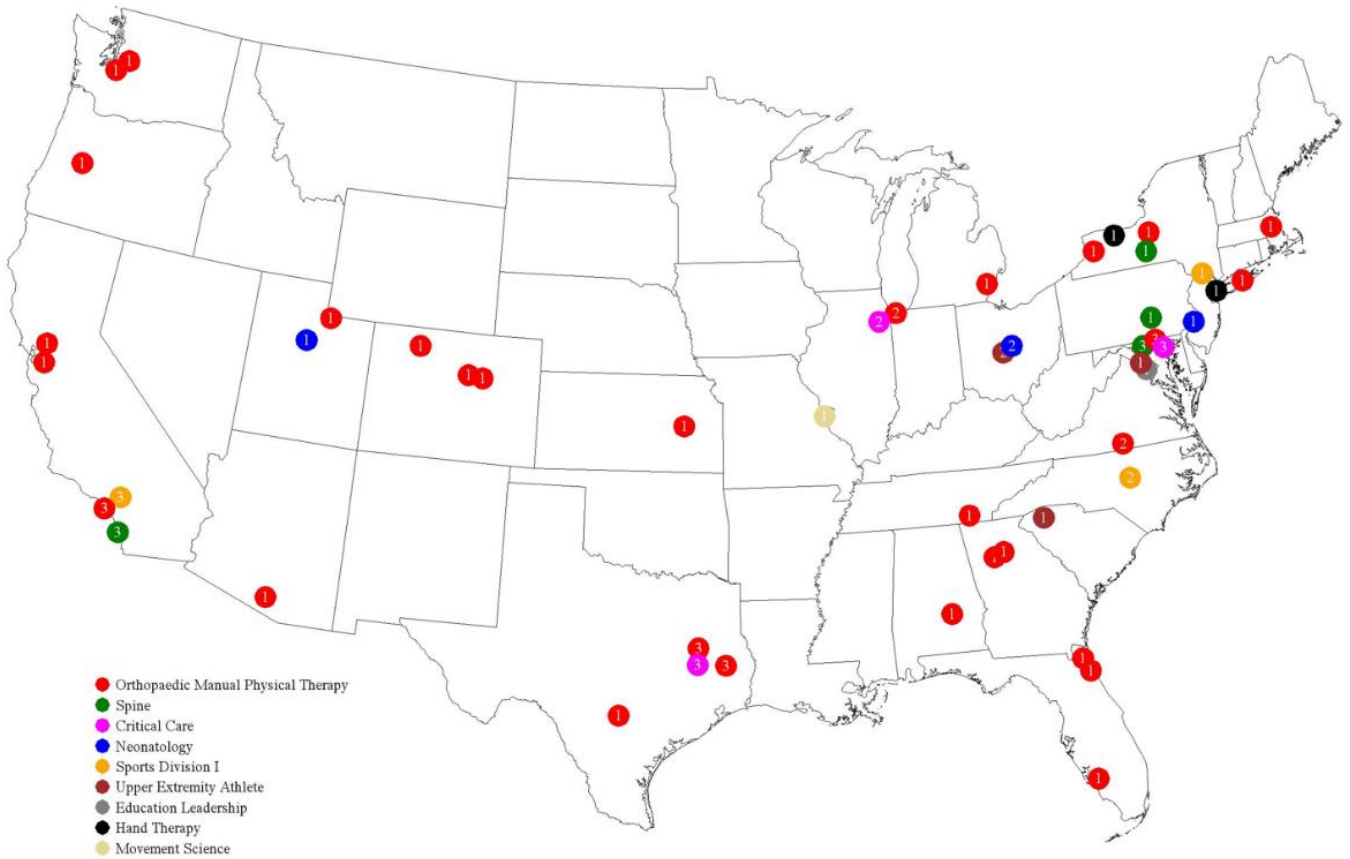

Figure 2.3 **USA Fellowships**

Table 2.4

USA Fellowship Programs

State	Critical Care	Education Leadership	Hand Therapy	Movement Science	Neonatology	Orthopaedic Manual Therapy	Spine	Sports Division I	Upper Extremity Athlete
Alabama						1			
Arizona						1			
California						3	1	1	
Colorado						3			
Florida						3			
Georgia						1			
Illinois	1					1			
Kentucky						1			
Massachu-setts						1			
Maryland	1					2	1		
Michigan						1			
Missouri				1					
North Carolina						1		1	
New York			2			3	1	1	
Ohio					1				1
Oregon						1			
Pennsyl-vania							1		
South Carolina									1
Tennessee						1			

Table 2.4 Continued

State	Critical Care	Education Leadership	Hand Therapy	Movement Science	Neonatology	Orthopaedic Manual Therapy	Spine	Sports Division I	Upper Extremity Athlete
Texas	1					3			
Utah					1	1			
Virginia		1							1
Washington						2			
Total	**3**	**1**	**2**	**1**	**2**	**30**	**4**	**3**	**3**

2.7 Conclusion

Discussion

This research collated and compared information about postprofessional programs within AUS and USA, and demonstrated opportunities for learning and areas of similarity and disparity.

Similarities in AUS & USA Postprofessional Education

Both countries shared challenges related to access to education geographically. In AUS, 39 of the 41 postprofessional programs offered an online component, thereby improving access. However, the programs often required travel and short stays to the academic center for face-to-face educational programming. In the USA the issue of access is accentuated by the format of fellowships, which require clinical mentoring by a Fellow, and residencies, which require clinical work, didactic work and mentoring by a clinical specialist. (Staff, n.d.) A recent survey of PTs in AUS and USA reported that access, both geographically and financially, was a significant barrier for many clinicians wanting to pursue postprofessional education.(Westervelt K et al., 2017)

Another similarity in both these regions was the area of study. There were a large number of orthopaedics/manual therapy and sports program in the USA and a large number of musculoskeletal/sport programs in AUS. The term 'orthopaedic' in the USA refers to musculoskeletal populations, and the musculoskeletal/sports specialization in AUS includes manual therapy. Therefore, once the terminology was clarified, the most common area of study in postprofessional programs was the same in both countries.

In addition to comparing the most common areas of programming, this research also identified areas of need. For example, the growing geriatric population and the relatively low number of geriatric residency programs in the USA, 7.4% (18/ 242) programs, might suggest the need for more programs within this area. AUS recognizes gerontology as an area of specialization but offered no postprofessional clinically based academic programs in this area, likewise identifying an area of need for the aging Australian population. Similarly, although the leading cause of death in the USA and AUS is coronary heart disease (United States Centers for Disease

Control, n.d.; Australian Institute of Health and Welfare, n.d.), the USA only offered 5 residency programs in cardio-pulmonology, while AUS offers no clinical academic postprofessional programs in this area. These findings support the recommendations from experts for a broader distribution of residency programs into all specialty areas. (Jensen, 2011; Kulig, 2014a)

Differences in AUS and USA Postprofessional Education

The results demonstrated differences in postprofessional education between the 2 regions. The initial difference is in the use of the term 'specialist'. This term is reserved for the highest level of clinical training, the Fellow level, in AUS but is used below the Fellow level in the USA similar to the AUS Titled level. Variation in the use of the term 'specialist' from one country to another can create confusion within the profession and the public. Another difference was a disconnect between nationally recognized areas of specialization and academic programs that offer that area of study. In AUS, postprofessional academic programs were only offered in 5 of the 8 areas of specialization and in 5 other areas. Not having a program in 3 areas of specialization automatically limits the pathway to become Titled to only the experiential pathway. In the USA, residency and fellowship programs were available in all 8 specialty areas and in 2 additional areas of emerging interest. However, residency and fellowship programs in the USA are still considered in their infancy stage and are not necessarily offered in areas of greatest need for the population (Furze et al., 2016).

Another area of difference was the degree earned in postprofessional education. Postprofessional education in AUS can be a progressive system in which a PT first earns a postgraduate certificate, then adds on course work to earn a postgraduate diploma, and finally completes an additional year of clinical and course work to earn a clinical master's degree. These programs are recognized by the APA for the purpose of Titling but not accredited by a single registration authority as they are in the USA. A benefit of this progressive system is the practicality for a busy clinician to gradually earn a higher qualification.

Postprofessional residency and fellowship programs in the USA are accredited by ABPTRF. Despite tremendous interest, committing to a residency program and then a fellowship program is a big financial and time commitment, and may be lacking the practicality of the articulated AUS system.

One of the biggest differences demonstrated was in numbers of programs. For the past decade there has been concern that the declining number of Australian PTs attending postprofessional programs will force programs to close, potentially compromising the advancement of the profession (Jull, G & O'Sullivan, P, 2006). These concerns appear to be legitimate as this research demonstrated a decline of postprofessional education programs in AUS (Fazey, 2015a). During the 6 months of data collection, 6 AUS postprofessional programs closed. This decline may be partially due to the lack of professional recognition of the importance of postprofessional education, lack of a tiered remuneration system for clinical specialists, the onerous pathway to become a specialist, and the rising cost of postprofessional education (Carr J & Shepherd R, 1996a; Fazey, 2015a; Jull, G & O'Sullivan, P, 2006).

Conversely, the USA has a rising number of clinical specialists and programs (American Board of Physical Therapy Specialists, 2015a). The USA has established an organized and clear pathway towards specialization and is amassing a significant percentage of the PT workforce as specialists; however, similar to AUS it lacks appropriate recognition and financial compensation for trained specialists. When PTs from AUS and USA were surveyed about benefits of postprofessional education, PTs reported recognition and compensation were important benefits to deciding to pursue postprofessional education (Westervelt K et al., 2017).

Although AUS's postprofessional PT education started before the USA, AUS has a small number of specialists, making it difficult for the profession to win recognition and compensation for specialists. It is imperative to come up with novel solutions to reverse the current trend of declining postprofessional PT education in AUS. The USA has a larger and actively growing number of specialists, and will soon approach a critical mass who can advocate for better recognition and compensation. The USA could benefit from studying the AUS system and learning from their colleagues that if this recognition does not follow in a timely manner, interest in specialization training could wane. This would be a great loss for the profession locally and globally. A clear opportunity for internationalization and collaboration in postprofessional education currently exists.

International Collaboration

The WCPT describes postprofessional education as a vital component to physical therapy practice and development (World Confederacy for Physical

Therapy, 2011). As PTs continue to expand their roles, they must be prepared to practice in an increasingly interdependent world (Lattanzi & Pechak, 2012). International collaborations among entry-level students have been demonstrated to be beneficial to visitors, hosts and faculty (Westervelt, Ellis, et al., 2016). International collaborations in postprofessional PT education could address several of the issues the profession faces today (Westervelt K et al., 2017) while also offering a more standardized postprofessional education format that meets the objectives of both the WCPT and the professional bodies. International standards of education are already being adopted in the manual therapy and sports specialization areas. IFOMPT and The International Federation of Sports Physical Therapists have international standards for postprofessional education (International Federation of Sports Physical Therapists, n.d.; International Federation of Manual Physical Therapists, n.d.)

Even though AUS and the USA have similar education qualifications, they demonstrate different trends in postprofessional education. Accessible opportunities for postprofessional education is of utmost importance and educators should foster programs that include hybrid learning formats or other novel distance learning formats to ameliorate the educational deserts. Incentives, such as a tiered remuneration rate and extended scope of practice with additional privileges, should be promoted for clinicians to pursue higher levels of education. Furthermore, incentives associated with increased education must correlate with growth in clinical specialists. Through collating information in this research, an international conversation between countries can be initiated. Postprofessional PT education can be fostered by looking and learning from our global colleagues. This collation and comparison of program offerings in the USA and AUS calls upon the profession to evaluate whether postprofessional PT education: (1) is accessible and innovative, (2) has a clearly defined pathway towards specialization for the profession and the community, (3) leads to professional privileges and compensation that are congruous with higher levels of education, and (4) meets the needs of the population.

Limitations and Additional Research

Potential limitations of this project include the lack of historical information regarding the postprofessional educational program offerings in Australia and the lack of consistent naming of programs by educational institutions. Access to

information was a main concern, but also a main reason for initiating this project. There may have been updates since the information was gathered. Additionally, it is recognized that by limiting this study to university programs in AUS and residency and fellowship programs in the USA, the study has under-estimated the post professional educational opportunities available in both countries. A final limitation of this this study was that the number of program was examined and not the number of participants in each program. In light of these limitations, this research adds to the body of literature by consolidating and comparing the postprofessional education available in 2 regions of the world.

The findings from this research demonstrate the need for research on how the profession internationally can provide more tangible benefits for talented PTs pursuing postprofessional education with the goal of increasing the number of postprofessional trained PTs who can advance the profession and meet the workforce demand. Research in novel methods and models to offer postprofessional education internationally that will promote collaboration and sharing of expertise is also advocated.

Conclusion

There is a lot to learn from comparing postprofessional education in AUS and USA. The Australian PT profession's concern over the declining number of AUS PTs attending postprofessional academic program for the past decade has been validated by the declining number of academic postprofessional programs being offered in AUS. Postprofessional programs are on the rise in the USA. This is an imperative time to collaborate on issues related to postprofessional education. Together we can strive to address issues related to the promotion of postprofessional PT education by providing clear pathways for professional advancement with standardized terminology that lead to professional privileges and compensation that are congruous with higher levels of education. We can address the universal challenges related to access to ameliorate educational deserts through innovative program delivery. We can address the disconnect between numbers of programs offered in some areas of specialization and areas of population need, especially in geriatrics. By centralizing information, this research supports opportunities for dialogue that can guide efforts aimed at upholding postprofessional PT education.

Through sharing of information and international collaboration, the physical therapy profession can strive toward advancing education and ultimately the profession.

2.8 References

References for this study can be found in the full reference list in chapter 7 of this thesis.

2.9 Manuscript Status

This manuscript has been published in *Physical Therapy Reviews 23 June 2017*.

CHAPTER 3.
POSTPROFESSIONAL PHYSICAL THERAPIST EDUCATION: A SURVEY FROM TWO DIFFERENT REGIONS OF THE WORLD

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Of note, this manuscript has been accepted for publication by the *Journal of Physical Therapy Education*. The article will be published in 2018 and will be available in print and on line from the *Journal of Physical Therapy Education.* The contents of this chapter have been removed according to a copyright restriction preventing this article from being widely distributed electronically at this time.

3.1 Prelude

This Chapter provides information on the interest and need for postprofessional education directly from the consumers. Survey data from a decade of graduates from the University of Vermont Physical Therapy program and from 7 years of graduates from Bond University Physiotherapy program provided insights that are remarkably similar despite the fact that the physical therapists surveyed lived in 2 different regions of the world. Of particular interest is the discovery that the perceived barriers and benefits to pursuing further education proved very similar for both populations. This is especially helpful for institutions looking to provide postprofessional physical therapist education, for whom these survey results provide useful information about their target population's expectations, desires, and challenges.

3.2 References

References for this study can be found in the full reference list in chapter 7 of this thesis.

3.3 Manuscript Status

This manuscript has been accepted for publication by the *Journal of Physical Therapy Education*.

A poster of this work was presented at the *Bond University Student Research Conference* October 2016. (Appendix 7)

A poster of this work was presented at the *Zeigler Research Forum* at the University of Vermont May 2016. (Appendix 7)

CHAPTER 4.
INTERNATIONAL COLLABORATION IN MANUAL PHYSICAL THERAPY: AN EDUCATIONAL MODEL

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Of note, this manuscript has been published in the *Journal of Physical Therapy Education*. The formatting for this chapter is in accordance with the guidelines of *Journal of Physical Therapy Education* and has been prepared in American English.

4.1 Prelude

This chapter pulls together a common theme identified in chapters 1-3, the need for international collaboration in physical therapist education. This theme has been identified throughout this research and is identified as a key policy of the World Confederating of Physical Therapy (WCPT, 2016). An international collaboration between two Doctor of Physical Therapy programs was established, implemented, studied and is presented as a model for other educational institutions.

4.2 Abstract

Background and Purpose: Internationalization allows the world of higher education to become more connected. International partnerships between physical therapist education programs open new opportunities for learning and cultural exchange. Relatively few international collaborative immersion experiences have been described in the physical therapy literature. The purpose of this article is to describe a model of international educational collaboration between physical therapist education programs at 2 universities in different countries. This collaboration was unique because it provided qualitative analyses of data collected from hosts and guests during the experience.

Method/Model Description and Evaluation: Eleven physical therapist students, 1 postgraduate student, and 2 faculty members from the University of Vermont (UVM) traveled to Bond University, Gold Coast, Queensland, Australia. While at Bond University, guest participants collaborated with 36 students in the final year of the Doctor of Physiotherapy program and 11 faculty members in a 2-week international manual therapy collaboration. During this experience, students participated in manual therapy course work, seminars, and cultural activities. Journal data were collected from the students from UVM. Students and faculty members from Bond University were surveyed with quantitative and open-ended qualitative questions that were matched with the journal prompts used for the students from UVM. Interpretative phenomenological analysis methodology was used to determine the meaning of this collaborative experience.

Outcomes: The following 3 themes emerged from the student data: learning—the acquisition of new skills both professionally and personally; collaboration—the development of new relationships and opportunities with faculty members and students; and experiencing the "other"—observations made from immersion while abroad.

Discussion and Conclusion: Themes identified were similar to those established within the literature. Participants gained life experiences from traveling and insight into their personal and professional goals. The international manual therapy collaboration between UVM and Bond University successfully initiated a new dialogue. The findings support the potential for future collaborative immersion opportunities between education programs to prepare emerging professionals to work in an increasingly global environment.

4.3 Background and Purpose

International partnerships between physical therapist education programs open new opportunities for learning and cultural exchange. Collaborative international learning opportunities are a recommended curriculum strategy in physical therapist education because they prepare students to practice in an increasingly interdependent world by engaging them in collaborative participant learning and cultural immersion and by facilitating collaborative research (Lattanzi & Pechak, 2012a). Additionally, collaborative learning opportunities expose students to various models of learning. According to the Commission on Accreditation in Physical Therapy Education, if students "become aware of multiple styles of thinking, diverse social concepts, values, and ethical behaviors," such awareness will "prepare them for identifying, redefining, and fulfilling their responsibilities to society and the profession" (Commission on Accreditation in Physical Therapy Education, 2014).

International partnerships between universities involve both parties participating in an exchange of teaching and learning (Allen & Oglivie, 2004). In physical therapist education, these partnerships can play important roles in meeting the professional curriculum expectations for cultural competency (Lattanzi & Pechak, 2012a), training physical therapists who are globally minded, and preparing the next generation for practice in an increasingly global health care arena. When 2 or more universities participate in faculty or student exchanges, it is important to understand the impact of the experience on both the visitors and the hosts. Few international collaborations have been described in the physical therapy literature (Pechak, 2012). In contrast, international learning opportunities appear to be more readily available in medical and nursing education programs (Pechak, 2012).

Ample literature exists to support the value of international immersion experiences in nursing education (Caffrey, 2005; Crandell, Wiegand, & Brosky, 2013; Levine, 2009; Maltby & Abrams, 2009; Smith-Miller, Leak, Harlan, Dieckmann, & Sherwood, 2010; St. Clair & McKenry, 1999; Wiegerink-Roe & Rucker-Shannon, 2008). Although most available research describes the nursing student perspective, there is evidence to support the notion that such immersion experiences would benefit all health care professionals, including physical therapists (Betancourt & Green, 2010; Dupre & Goodgold, 2007; Grzelak & Glickman, 2014; Hayward, Li, Venere, & Pallais, 2015; McDowell, Goessling, & Melendez, 2012;

Peiying, Goddard, Gribble, & Pickard, 2012). Students who have traveled and been immersed internationally have benefited in several ways. For example, they often report the experience of travel as transformative to their personal beliefs and worldviews. Students who have been immersed internationally, even for a short period of time, report feeling greater confidence in their clinical skills (Caffrey, 2005; Dupre & Goodgold, 2007; Grzelak & Glickman, 2014; McDowell et al., 2012; Sawyer & Lopopolo, 2004; St. Clair & McKenry, 1999; Wiegerink-Roe & Rucker-Shannon, 2008; Wilcox & Taylor-Thompson, 2012). This result may be due to the "profound impact that 'leaving the comfort of the familiar' can have on students in terms of personal growth and gaining professional competence" (Smith-Miller et al., 2010, p. 26). In addition, students report feeling prepared to engage in future learning opportunities and cultural experiences as clinicians (Smith-Miller et al., 2010). One study found that students had an increased "respect for and understanding of other cultures" (Wiegerink-Roe & Rucker-Shannon, 2008, p. 74). These students also cited a desire to participate in a style of learning that was more "vivid and real" (Wiegerink-Roe & Rucker-Shannon, 2008, p. 74) as a reason for continuing to travel.

Maltby and Abrams (Maltby & Abrams, 2009) led a study that evaluated the meaning of a 3-week immersion experience in Bangladesh for undergraduate nursing students. While abroad, students participated in interviews of patients and toured various clinical settings. Analysis of the students' journals identified 4 themes: "beginning to see, thinking about the seen, wanting to change the seen, and transformed by the seen" (Maltby & Abrams, 2009, p. 6). Researchers concluded that immersion experiences help students cope with confronting cultural differences by teaching them to better understand both themselves and their patients. This model of teaching promotes a holistic approach to interactions with patients by fostering unbiased understanding between the health care provider and the patient.

Research that appraises the effects of a short-term international immersion experience on physical therapist students in the United States is scarce. A thorough search of the literature revealed a study that examined the meaning of such an experience from the perspective of a physical therapist student (Grzelak & Glickman, 2014). The researchers assessed the qualitative value of a short-term, 8-day, immersion experience in the Republic of Suriname for a second-year physical therapist student from the United States. Reflective journalizing and emotional recall

were used to record the experience, and an ethnographic approach was applied. Four themes were identified: "genuine warmth of hosts, similarities between American and Suriname physical therapist practice, ease of acknowledging, accepting and talking about diversity, and enhanced appreciation for the value of a US education" (Grzelak & Glickman, 2014, p. 20). Although that study did explore the student perspective, several characteristics of the study may have biased the results. The limited sample size of the study (n=1) made it difficult to ascertain which experiences were part of a phenomenon common among US physical therapist students and which experiences were unique to the student in the study, who also was a co-author. In addition, data on the perspective of the host community were not collected (Grzelak & Glickman, 2014). The methodology was also a limiting factor. Researchers applied an ethnographic approach during qualitative analysis; such an approach focuses on describing a particular culture (Domholdt, 2000). The limitation of this approach is that the "student's observations are not always true reflections of society" (Grzelak & Glickman, 2014, p. 21).

Nevertheless, that study made a significant contribution to the literature by being one of the first to attempt to understand the experiences of US physical therapist students during immersion abroad. The study demonstrated that a student who has traveled abroad is likely to reflect on his or her experiences afterward and find additional meaning and application of new knowledge. For example, the participant described a sense of having a broadened worldview and a higher level of cultural sensitivity after just 8 days of immersion (Grzelak & Glickman, 2014).

Another study in the physical therapy literature assessed an existing model of international service learning for physical therapist students (Hayward et al., 2015). Students participated in "academic study of Ecuador, pediatric physical therapy courses, and a 9-day international service learning trip involving 2 Ecuadorian orphanages" (Hayward et al., 2015, p. 44). Sixty-one physical therapist alumni who had participated in the international service-learning program over the preceding 5 years completed an online survey to assess the long-term impact of the service-learning experience. The 6 key global partners of the experience took part in one-on-one interviews (Hayward et al., 2015). Collected data showed that alumni who had participated in the service-learning trip demonstrated an increased desire to "develop cultural competence, and participate in pro bono physical therapy" (Hayward et al.,

2015, p. 44) and that the global partners expressed high levels of satisfaction with the partnership overall.

As the physical therapy profession moves toward forging international collaborations, addressing the lack of literature assessing the impact of immersion experiences on visiting and host students and the community is imperative (Betancourt & Green, 2010; Caffrey, 2005; Dupre & Goodgold, 2007; Grzelak & Glickman, 2014; Maltby & Abrams, 2009; McDowell et al., 2012; Peiying et al., 2012; Sawyer & Lopopolo, 2004; Smith-Miller et al., 2010; St. Clair & McKenry, 1999; Wiegerink-Roe & Rucker-Shannon, 2008; Wilcox & Taylor-Thompson, 2012). Grzelak and Glickman described the student viewpoint of being immersed abroad (Grzelak & Glickman, 2014). In doing so, the authors highlighted a distinct gap in the literature: an absence of studies addressing a host country's perspective during an international collaborative effort. The authors stated, "Gaining feedback from the host community (staff and students) about the exchange would better address ethical concerns for this type of research study" (Grzelak & Glickman, 2014, p. 21). Other authors have come to the same conclusion because the experience can put stress on receiving countries and require a great deal of a community's time and energy to prepare for the experience (Crump & Sugarman, 2008; Grzelak & Glickman, 2014; Ketefian, 2000; Pechak & Thompson, 2009). Although travel-abroad experiences have been promoted as 1 of the more effective teaching opportunities for engaging university students and promoting the exploration of cultures and life experiences different from their own (Kuh, 2008), additional research is needed to assess the influence of an international collaborative experience from the host's perspective as well as the traveler's perspective.

The purpose of this article is to describe a model of international educational collaboration between 2 universities with Doctor of Physical Therapy (DPT) programs. Available evidence to support the importance of this topic to the physical therapist education community is presented, and a description of the course design

and a discussion of the efficacy of this model follow. The collaboration was unique because it provided qualitative analyses of data collected from all participants, including visiting students, host students, and faculty members. Analysis of this model offers a new paradigm for institutions wishing to establish academic international collaboration.

4.4 Method/Model Description and Evaluation

Educational Setting

The University of Vermont (UVM) is a public university in the northeastern United States. The DPT curriculum is a 3-year graduate-degree program. The "International Manual Therapy Collaborative" with Bond University, Gold Coast, Queensland, Australia, was an elective course offered to students in the final year of the UVM program and to clinical educators associated with UVM. Participation was voluntary, and selection was based on a written application. Participants were responsible for all expenses.

Bond University is a private university. The decision to partner with Bond University was proposed by faculty members at UVM who wanted to provide students at UVM with an advanced instruction course in manipulation and manual therapy skills. The faculty members had a professional relationship with the program director at Bond University that facilitated the establishment of the collaboration. Australia is widely considered to be a leader in the field of manual physical therapy, and Bond University has the first Australian Physiotherapy Council–accredited entry-level Doctor of Physiotherapy (DPhty) program in the country. The DPhty program is a 2-year, year-round graduate-degree program that attracts diverse students from around the world (Table 1). Additionally, the curricula at both UVM and Bond University were compared and deemed to be similar, making this endeavor possible.

Participants

Informed consent was obtained from all participants. Eleven physical therapist students, 1 postgraduate student, and 2 faculty members (1 of whom

[KCW] is the primary investigator) from UVM traveled to Bond University. While at Bond University, guest participants from UVM collaborated with 36 students in the final year of the DPhty program and 11 faculty members, including 2 guest lecturers from New Zealand who taught classes to students from both UVM and Bond University.

Between June 28, 2014, and July 11, 2014, participants from UVM traveled to Bond University. While at Bond University, participants from UVM lived in

campus housing. Participants attended lectures and learned techniques for advanced manual therapy skills, such as manipulation of the cervical, thoracic, and lumbar spine and the sacroiliac joint. Additionally, participants from UVM spent time learning about the Australian health care system and interacting with participants from Bond University. Multiple team-building activities and cultural opportunities were provided. Detailed descriptions of the procedures before and during the immersion experience are provided in Tables 2, 3, and 4.

Table 4.1

Participant Demographics[a]

Characteristic	Students From University of Vermont (n=12)	Students From Bond University (n=26)	Host Faculty (n=11)
Age (y)			
18–23	7 (58.33)	7 (26.92)	0 (0)
24–29	3 (25)	15 (57.69)	0 (0)
30–39	2 (16.67)	2 (7.69)	6 (54.55)
40–49	0 (0)	1 (3.85)	2 (18.18)
50–59	0 (0)	0 (0)	2 (18.18)
60–69	0 (0)	0 (0)	1 (9.09)
Not answered	0 (0)	1 (3.85)	0 (0)
Sex			
Women	7 (58.33)	12 (46.15)	7 (63.64)
Men	5 (41.67)	13 (50)	4 (36.36)
Not answered	0 (0)	1 (3.85)	0 (0)
Country(s) of citizenship			
Australia	0 (0)	9 (34.62)	7 (63.64)
United States	11 (91.67)	7 (26.92)	0 (0)
Canada	0 (0)	7 (26.92)	0 (0)
New Zealand	0 (0)	0 (0)	4 (36.36)
Hong Kong	0 (0)	1 (3.85)	0 (0)
Japan	0 (0)	1 (3.85)	0 (0)
China	1 (8.33)	0 (0)	0 (0)
Not answered	0 (0)	1 (3.85)	0 (0)

[a]*Data are reported as number (percentage) of participants.*

Table 4.2

Procedures for Participants From University of Vermont

Time Period	Description
Before travel	• Participants attended 3 seminars focusing on the foundational theories of manual physical therapy and information on travel and the culture of Australia. • To learn the foundational theories of manual therapy, the students selected a topic of interest. Each participant prepared a written paper and led a discussion on the topic. • Participants had attended lectures from the faculty at the University of Vermont on foundational theories of manual physical therapy and had practiced spinal mobilization techniques before departing for Australia. • To prepare for discussions on international health care access models, the participants selected a country and prepared an outline describing how the health care system is accessed in that country. • In the 2 seminars focusing on information about travel and the Australian culture, the participants learned about the location of the Gold Coast of Australia, time zone, climate, transportation, communication, the Aboriginal population, medical care, water purity, wildlife, safety/security, and country entry/exit requirements for visas and passports. They also learned about the Bond University Doctor of Physiotherapy (DPhty) program, campus, residence halls, cafeteria, and public transport system.
During immersion	• Participants lived in the Bond University student residence halls and had full access to the student facilities, including the teaching laboratories, cafeteria, and fitness center. • Participants attended 3 full days immersed with second-year participants from Bond University in advanced-level classes with guest instructors from New Zealand. • Participants attended skill practice sessions with students in the Bond University DPhty program and health care promotion presentations at which the students in the Bond University DPhty program presented community advocacy projects. • To learn about the Aboriginal culture, the participants attended a day program at the local Aboriginal culture center, a lecture and guided tour of the Aboriginal art display at Bond University, and a ceremony to celebrate Aboriginal students on campus (including an Aboriginal dancing demonstration).

Table 4.3

Procedures for Participants From Bond University

Time Period	Description
Before arrival of participants from University of Vermont	• Participants were briefed on the arrival and length of stay of the students in the Doctor of Physical Therapy program at the University of Vermont (UVM). • Participants were informed that there would be extra classes and laboratories with the participants from UVM on neurodynamics and manual therapy, with guest instructors from UVM and New Zealand. • Bond University class schedules were adjusted to create time for students to attend group classes while continuing their regular curriculum during the visit of students from UVM. • Students at Bond University had studied the foundational theories of manual physical therapy and practiced spinal mobilization techniques in laboratories before the arrival of students from UVM.
During immersion	• Participants attended 3 full days immersed with second-year participants from UVM in advanced-level classes with guest instructors from New Zealand. • Students at Bond University hosted community advocacy and fund-raising projects and invited the participants from UVM to join in the community-based activities. • Students at Bond University prepared and invited the students from UVM to a proper morning tea. • Students at Bond University invited the participants from UVM to nonacademic gatherings and informal discussions.

Table 4.4

Procedures for Faculty From Bond University

Time Period	Description
Before immersion	• Coordinated with faculty members from the University of Vermont (UVM) to compare curricula. • Coordinated class schedules and laboratory schedules to accommodate extra students. • Assisted with connections to university accommodations.
During immersion	• Led seminars for the participants from UVM on the Australian health care system, health care access in Australia, the role of physical therapists in Australia as primary health care providers, and the history of Australian physical therapist education. • Gave presentations on current research agendas. • Provided nonacademic immersion opportunities through formal and informal gatherings with students and faculty members at Bond University and their family and friends.

4.5 Results

All participants were surveyed for descriptive quantitative data (Table 1). Qualitative data were collected from participants from UVM in the form of journal responses. Participants were provided with prompts for journalizing 5 times throughout the 2-week immersion (Appendix 8); there was no requirement for free journal writing, so that the participants completed only the 5 prompted journal entries. Participants were asked to complete this task independently, and no minimum time requirement for writing was specified. All of the students from UVM participated.

All participating students and faculty members from Bond University were invited to participate in online surveys at the end of the collaboration to understand the impact of the visit on the hosts. The response rate of the students was 72.22%. The response rate of the faculty members was 84.62%. Both quantitative and open-ended qualitative survey questions (Appendixes 9 and 10) were administered via e-mail with the LimeSurvey tool (Team, 2012). Different program evaluation methods were used for the hosts and the visitors because the host faculty members expressed concern that the host students were participating in collaborative classes in addition to regularly scheduled classes and therefore would not have time for 5 independent journalizing sessions. Efforts were made to match the journal prompts with the open-ended survey questions whenever possible. The 2 methods did have several similarities, including the fact that the UVM journalizing prompts were structured and did not include free writing sessions. Although this feature of the journalizing prompts could have limited the depth of the journalizing responses, it meant that the journalizing prompts closely resembled the open-ended survey questions provided to the participants from Bond University. The similarity of the journalizing prompts to the open-ended survey questions made comparing the comments about the immersion from the groups of participants possible.

Interpretive phenomenological analysis was used to examine how the participants interpreted their experiences while participating in the collaboration (Pietkiewicz & Smith, 2014). The research method was phenomenological because "it [made] enquires into consciousness, mental life, or how things seem[ed] to individuals" (Snelgrove, 2014). The journals from the participants from UVM

allowed the researchers to examine the students' personal discoveries, perceptions, and connections throughout the experience. The open-ended survey questions used

for the participants from Bond University were designed to attempt to do the same within the confines of needing to limit the time commitment of the students from Bond University.

A dual interpretation process was used to evaluate the data. Dual interpretation is the attempt to understand what an experience is like from the participant's perspective. The interpretation is considered to be dual because "the participant must first try to make meaning of their world, then secondly the research tries to make sense of the participant's meaning" (Pietkiewicz & Smith, 2014, p. 8). Each personal journal or open-ended survey response was thoroughly analyzed for recurring ideas specific to each question, and the findings were compiled into overarching themes.

As is common in interpretive phenomenological analysis, 1 of the researchers was engaged throughout the experience as a participant to gain more insight from personal contact with the events, thus discovering what the series of events meant to the people experiencing them (Jewell, 2011). The small size of the participant pool allowed in-depth analysis of the experience and its meaning for each participant (Jewell, 2011; Pietkiewicz & Smith, 2014). The participant pool itself was fairly homogeneous in that all participants were within the physical therapy profession. This satisfied one of the criteria for an interpretive phenomenological analysis and allowed for observation of themes in the data set (Pietkiewicz & Smith, 2014). Direct quotes from participants were used to help identify the significance and validity of the themes (Geri LoBiondo-Wood & Haber, 2006).

Members of the research team analyzed the data from participants from UVM and Bond University by reading the responses and identifying common themes. Themes that appeared multiple times among the participants' responses were considered significant. Each researcher individually performed a preliminary synthesis of the themes. Final synthesis of the data was performed as a team by seeking 80% consensus of themes identified from journal entries and open-ended survey questions.

Three overarching themes in the data from the participating students were identified: learning—defined as the acquisition of new skills both professionally and personally (manual therapy skill acquisition for professional learning was prevalent); collaboration—defined as the development of new relationships and opportunities

with faculty members and students; and experiencing the "other"—defined as the observations made from immersion in the classroom, residence hall, and city. Often theme 3 involved the refinement of previous expectations (Table 5).

The credibility of the researchers' analysis was demonstrated by sharing the interpretation of the findings with the participants (Creswell, 2003). A letter summarizing the thematic analysis was sent via e-mail to all of the participating students from UVM and Bond University. All participants agreed with the themes identified by the researchers, supporting credibility. Auditability was demonstrated by listing the analysis steps performed by the researchers in a manner clear enough that others could follow the same step-by-step process. Fittingness was demonstrated by providing enough detail about the participants' experience that others could use the model to establish their own international collaboration (Creswell, 2003).

Descriptive quantitative statistical data were analyzed to summarize the sample and were triangulated with qualitative data to provide a thorough analysis of the experience, so that this research could be used as a model for future programs.

Table 4.5

Student Responses to Supporting Themes[a]

Theme	Response
1: Learning	"[This opportunity] has provided a depth and breadth of experience that would have been difficult to gain through on-campus learning only." (UVM 11) "It gave me the chance to work with other individuals who gave a different perspective on specific techniques and a chance to improve my HVT's." (Bond 26) "I feel as though I am light years ahead of where I was before I got on that plane to Australia." (UVM 10) "I was not comfortable handling necks during my first clinical and now I feel like my palpating skills have skyrocketed!" (UVM 2) "Australian physiotherapists have different ways of thinking about the same things we have been learning about for years and it is exciting to be able to bring that knowledge back to the states." (UVM 4)
2: Collaboration	"I have appreciated how open my classmates have been to forming new relationships and trying new things. (UVM 3) "… [My] favorite experience [was] that both the American and Australian PT students and faculty [were] working together to learn manual techniques from [a leader in manual therapy]." (UVM 6) "All the students were extremely friendly and integrated really well with our cohort. They were also very keen to share information on their experiences and knowledge, which was great." (Bond 17)
3: Experiencing the "other"	"From the surface it could be part of the US, but as I have talked to the people and looked a little deeper, the culture and people are different." (UVM 1) "… Everyone I spoke to, whether Australian, North American, African, or Asian, were welcoming and friendly and very interested to find out about our experiences as PT students in the US." (UVM 11) "Most of [the Australians] have been extremely welcoming and willing to include us in any/all activities." (UVM 3) "Great manual therapy classes! Was great to speak with people about their program in the USA and to see the similarities. I had wondered what the US programs were like compared to Bond." (Bond 15) "I am surprised by how laid back the entire country seems to be." (UVM 12) "Was good to be exposed to physiotherapists from around the world getting different perspectives on techniques and their experiences." (Bond 26)

Abbreviations: UVM, University of Vermont; Bond, Bond University; HVT's, high-velocity thrusts.

[a]Participants from whom quotes were obtained are indicated by numerals in parentheses after the quotes.

Analysis of relevant responses of participants from UVM and Bond University revealed that, as a result of the collaboration experience, 33% of the participants from UVM and 34% of the participants from Bond University reported that they would now consider traveling and working abroad. When asked if their understanding of the other country's program and education levels had increased, 100% of the participants from UVM and 50% of the participants from Bond University responded "yes." When students from Bond University were asked if the benefits of the collaboration outweighed the disruption of their class schedules, 79.17% of the responses were positive. The students from Bond University commented that the collaboration was very enjoyable and informative and that they "would recommend it to become an annual undertaking" (Bond Student 23). Many of the host and visiting students expressed interest in future international opportunities but cited multiple barriers preventing them from taking advantage of such opportunities (Table 6).

Table 4.6

Barriers to Future Travel[a]

Barrier to Future Travel	Students From University of Vermont (n=12)	Students From Bond University (n=26)
Money	6 (50)	13 (50)
Time	4 (33.33)	0 (0)
Visa issues	2 (16.67)	3 (11.54)
Licensure issues	3 (25)	8 (30.77)
Fear	2 (16.67)	0 (0)
Relationship ties	6 (50)	3 (11.54)
Lack of knowledge	5 (41.67)	5 (19.23)
Other	1 (8.33)	7 (26.92)
Not completed	0 (0)	3 (11.54)

[a]*Data are reported as number (percentage) of students.*

When faculty members were asked if the benefits of the visit outweighed the disruption to the normal schedule, 82% answered "yes." Most of the faculty members (63.64% of respondents) expressed interest in teaching a course abroad or visiting a university abroad, short term. Another 54.55% of faculty members expressed interest in an international research collaboration. Table 7 shows faculty members' interest in future opportunities. As 1 participant stated, "It was a great experience to meet the [UVM] staff and students and have an opportunity to discuss differences in the profession and approaches to teaching. It was good to see the similarities. International collaboration is invaluable" (Bond Faculty 11).

Table 4.7

Faculty Interest in Future Opportunities

Opportunity	No. (%) of 11 Faculty Members to Whom the Opportunity Was Appealing
Short-term visit to a university outside Australia	7 (63.64)
Sabbatical abroad for half-year	3 (27.27)
Sabbatical abroad for 1 year	2 (18.18)
International research collaboration	6 (54.55)
Organizing a student trip abroad	4 (36.36)
Teaching a continuing education course abroad	7 (63.64)
Attending a continuing education course abroad	1 (9.09)
None; I am not considering traveling	0 (0)
Other comment … "I am not sure"	1 (9.09)

4.6 Discussion

The literature has shown that students benefit from short-term immersion experiences (Betancourt & Green, 2010; Caffrey, 2005; Dupre & Goodgold, 2007; Grzelak & Glickman, 2014; Levine, 2009; Maltby & Abrams, 2009; McDowell et al., 2012; Peiying et al., 2012; Sawyer & Lopopolo, 2004; Smith-Miller et al., 2010; St. Clair & McKenry, 1999; Wiegerink-Roe & Rucker-Shannon, 2008; Wilcox & Taylor-Thompson, 2012), and the results of the present study support this finding for physical therapist students and their hosts. Analysis of the data identified 3 themes: learning, collaboration, and experiencing the "other." These themes were similar to those identified in other short-term immersion studies (Grzelak & Glickman, 2014; McDowell et al., 2012; Peiying et al., 2012; Sawyer & Lopopolo, 2004; Smith-Miller et al., 2010; Wilcox & Taylor-Thompson, 2012).

The first theme identified was learning, which is defined as "the activity or process of gaining knowledge or skill by studying, practicing, being taught, or experiencing something."(Merriam-Webster, 2016) Participants in the collaboration learned much from their experiences, gaining both professional knowledge and personal knowledge. Personally, participants gained valuable life experiences from traveling as well as insight into their goals and values. This finding was demonstrated by 1 student who said, "This trip has provided me with confidence and values that I will carry with me as I start my rotations" (UVM Student 12). Current evidence supports this finding, with several studies showing that travel fosters students' self-awareness and broadens their worldview through experiential learning (Grzelak & Glickman, 2014; Hadis, 2005; Smith-Miller et al., 2010; Wiegerink-Roe & Rucker-Shannon, 2008).

Professionally, participants from both UVM and Bond University reported improvements in their manual techniques through the refinement of skills such as palpation and high-velocity thrusts. The overall experience was described as "very beneficial, especially for perfecting and refreshing our mobilization skills" (Bond Student 17). As the visitors, the participants from UVM learned about Australia's unique health care system. One participant stated, "Working with the [Bond] students and getting a general overview of the Australian health care system ... was fantastic. I was able to learn so much" (UVM Student 10). In exchange, Bond University

participants felt that the UVM presence was a refreshing change and that they

learned a great deal about the education of the UVM DPT program through discussions with the participants from UVM. One participant wrote, “Having the Vermont students attend lecture added a new aspect and excitement to class” (Bond Student 8). Another reported gaining “a better understanding of how the [American] education system is set out and a better understanding of the level of knowledge of [their] American colleagues” (Bond Student 23).

Learning is a notable theme of immersive travel. Grzelak and Glickman found that “personal and professional growth resulted from interacting and participating fully within the daily life of a culture different from the student’s own” (Grzelak & Glickman, 2014, p. 20). The Grzelak and Glickman study is similar to the international collaboration in the present study in the sense that the participants from UVM were fully immersed in the daily activities of their peers from Bond University. The students from UVM studied in the same classrooms, lived in the same campus housing, and learned from the same instructors. Therefore, both groups of participants gained insight into the lives of their international colleagues; their experiences expanded their awareness of the world and resulted in personal growth.

Compared with other immersion studies, the present immersion study is unique because of its emphasis on the learning of manual physical therapy techniques. This type of professional growth is not common in immersion studies; however, certain aspects of professional development, such as the “improved ability to work cross-culturally, and the ability to clarify and commit to professional goals,” (McDowell et al., 2012, p. 369) are recognized benefits.

The second theme identified was collaboration. Collaboration is an inherent benefit of any organized international immersion experience and has been well documented in the student immersion literature (Betancourt & Green, 2010; Caffrey, 2005; Crandell et al., 2013; Dupre & Goodgold, 2007; Grzelak & Glickman, 2014; Maltby & Abrams, 2009; McDowell et al., 2012; Peiying et al., 2012; Smith-Miller et al., 2010; St. Clair & McKenry, 1999; Wiegerink-Roe & Rucker-Shannon, 2008). Collaboration among health care professionals is an essential element within the physical therapist scope of practice, as illustrated in the American Physical Therapy Association Vision 2020 statement, which states that all physical therapists should be capable of autonomous and collaborative practice in all settings, including internationally (American Physical Therapy Association, 2015c). Students and

faculty members from both universities who participated in the present study reported many benefits of collaboration, such as the exchange of knowledge, the formation of lasting relationships between colleagues, the opening of opportunities for travel through future collaborations, and the advancement of research. One participant from Bond University noted *"*It was good to be exposed to physiotherapists from around the world getting different perspective on techniques and their experiences" (Bond Student 26). Another participant reflected, "Meeting people and working with different learning styles was helpful for learning and retention" (UVM Student 12). Participants appeared to find that working with their international peers was a great form of motivation and a refreshing change.

When participants collaborate, they benefit from exposure to a "diverse source of knowledge and experience, which contributes positively to the learning process" (Gokhale, 1995, p. 28). Students who struggle with different interpretations of a situation benefit through their strengthened ability to critically reason, and the dialogue produced among participants leads to a better overall comprehension of the topic (Gokhale, 1995). A study of the effects of international fieldwork partnerships between Canadian occupational therapist students and 6 different host locations revealed similar results of collaboration (Cameron et al., 2013). Over the course of 10 years, the study showed that partnerships fostered research and led to the development of several practice guidelines. Additionally, these partnerships increased the number of collaborations between university faculty members and led to the development of multiple community programs in Cameroon (Cameron et al., 2013).

The third theme identified was experiencing the "other," defined as the observations made from immersion in the classroom, residence hall, and city. Often theme 3 involved the refinement of previous expectations. The experience itself changed the perspectives of the participants from UVM on both the host country and their international peers. Upon arrival in Australia, the participants were asked to reflect on their expectations for the trip. One participant wrote, "I expect many

aspects of Australian life can be quite different from what I have in the [United] States" (UVM Student 8). Many of the student participants from UVM reported feeling anxious to be learning alongside the participants from Bond University. Another student wrote, "Before we arrived I thought that the Australian

physiotherapy students would have advanced manual skills that far surpassed the manual skills we were taught in the US" (UVM Student 7). The students were put at ease when they actually met and compared skills. Participants also noted that some of the more memorable first impressions were the country's natural beauty, the warmth of the Australian people, and the diversity of its citizens. Another participant wrote, "From the surface it could be part of the US, but as I have talked to the people and looked a little deeper, the culture and people are different" (UVM Student 2).

Maltby and Abrams discovered a similar shift in the perspectives of participants during an international immersion experience in Bangladesh; the first contact with the hosts had a lasting impact on the participants' perspectives on the experience (Maltby & Abrams, 2009). The participants in that study were confronted with dramatic cultural differences in Bangladesh, which gave them the opportunity to "think about what they were seeing and how it related to their own experience and what they were learning" (Maltby & Abrams, 2009, p. 6). In contrast, the participants in the international collaboration in the present study traveled to a place that was culturally similar, forcing the participants to gain insights about the experience through direct interactions with their international peers. These interactions had a marked impact on the overall perspectives of each cohort on the experience. One student wrote, "The Bond students … have been extremely welcoming and willing to include us in any/all activities. They have seemed very open to our presence and willing to work through the new material with us" (UVM 3). Another student was thoughtful in pointing out the differences in the group dynamics between the participants from Bond University and the participants from UVM, noting that in the cohort from Bond University, "the collective group effort is what is valued over the individual accomplishment" (UVM Student 11). Participants from Bond University identified with experiencing the "other" through their interactions with the participants from UVM in the classroom. A student participant from Bond University noted, "the experience has showed me how international physiotherapy practices are.

This has improved the confidence in my learning as it has solidified that my practice is similar to what is occurring in North America" (Bond Student 1).

Faculty members who participated in the present study also reported multiple benefits of the experience. One faculty member noted that the experience was a "very worthwhile visit. I was more than happy to contribute and collaborate with the

sessions" (Bond Faculty 9). Another faculty member commented that the experience was "extremely beneficial for students and staff alike. Obvious sharing of invaluable knowledge on current research topics being undertaken over both sites and also shared competencies between students" (Bond Faculty 10). When faculty members were asked how their perceptions of American physical therapists had changed over the course of the experience, 1 participant stated, "I was interested to see and hear about the level of manual therapy being taught into the program at UVM. It was far greater than what I had anticipated" (Bond Faculty 10). It is interesting that both student participants and faculty participants were expecting to find greater differences in manual therapy education levels between the programs, when in fact many similarities existed.

Limitations

A limitation of the present study was the format of data collected. Having only prompted journal entries limited the depth and breadth of the qualitative data from the participants from UVM. Although the prompts provided the researchers with the data necessary to analyze the effects of the trip, it limited the participants from being able to write freely about experiences that were important to them. We recommend that future studies include more daily reflection journalizing. The inclusion of semistructured interviews of participants could also provide greater depth and understanding of participants' experiences. The format of the program evaluation was different for the participants from Bond University, who were given a survey. Because the open-ended questions were matched with the journal prompts for the students from UVM, interpretation of the data was still possible. However, we recommend that all participants complete the same procedures for program evaluation in future studies, if possible.

Another limitation of the present study was the self-selected participant pool from the visiting university. Many barriers may have limited students from applying for the program. One of the greatest barriers can be the cost of traveling abroad. A solution to this problem is offering student funding to reduce the cost and allow more accessibility. Another solution is bringing the international educators to the students. Likewise, technology can be used to bring classrooms together through video conferencing. It would be interesting to study whether such a virtual connection

could create similar opportunities for collaboration, learning, and experiencing the "other." In addition, future research could fully assess the effects of an immersion experience on participants' cultural competency. Although observations made by the researchers seemed to suggest that some level of cultural competency was gained, this project was not designed to appropriately measure such a result. Future studies could include a cultural competency tool to properly assess any gain.

4.7 Conclusions

This international manual therapy collaboration between UVM and Bond University successfully initiated new dialogue about international collaboration and fostered several opportunities for visiting students, host students, and faculty members. We hope that this method will serve as a model for future international collaborative efforts. Students and faculty members play critical roles in the promotion of internationalization through their involvement in academic collaborations. This article describes a working model for future collaborative immersion opportunities between physical therapy education programs with the aim of preparing emerging professionals to work in an increasingly global health care arena.

4.8 References

References for this study can be found in the full reference list in chapter 7 of this thesis.

4.9 Manuscript Status

This manuscript has been published in the peer reviewed *Journal of Physical Therapy Education*, October 2016, 30(4). (Appendix 13)

This method / model was presented as a platform presentation at the *American Academy of Orthopaedic Manual Therapy Annual Conference* on October 24, 2015 in Louisville Kentucky

The abstract of this manuscript was published in the *Journal of Manipulative and Manual Therapy* October 2015.

A poster of this work was presented at the *Zeigler Research Forum* at UVM in May 2015 (Appendix 14)

Please note, although the title of the platform presentation and the manuscript are the same, only a small portion of the findings were actually presented at the platform presentation.

CHAPTER 5.
AN ONLINE MODEL OF INTERNATIONAL CLINICAL MENTORING FOR NOVICE PHYSICAL THERAPISTS

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Of note, this manuscript has been submitted to the *Journal of Manual and Manipulative Therapy* and is presently under review. The formatting for this chapter is in accordance with the guidelines of the *Journal of Manual and Manipulative Therapy* and has been prepared in American English. This

5.1 Prelude

This chapter pulls together the findings of the first 4 chapters and presents an innovative model to break down the barriers to postprofessional physical therapist education seen around the world. It takes one aspect of postprofessional education, clinical mentoring, and presents a model to provide online clinical mentoring to small international groups of novice physical therapists. Modern technology is used to bring together clinicians from all around the world for clinical mentoring to help support the transition from student to independent confident practitioner. This model demonstrated gains in confidence and critical thinking for the novice participants but also has implications that can go far beyond supporting the novice. For example, it opens the possibilities of using this model to support clinicians in rural or remote settings. It also opens possibilities for providing mentoring to post graduate students while on clinical placements. Most importantly it demonstrates that providing clinical mentoring internationally is not only possible but effective.

5.2 Abstract

Background and Objective: Clinical mentoring is important for novice physical therapists who face insecurities with challenging patient populations and are developing critical thinking and clinical-decision making skills. Research exploring innovative strategies to reduce barriers and provide mentoring to novice clinicians is needed. The purpose of this study was to examine the effects of providing online clinical mentoring to small international groups of novice clinicians treating patients with spinal dysfunction in the outpatient setting.

Methods: Eleven novice and four expert clinicians were allocated into international groups of one clinical expert and three novice clinicians. Four one-hour group video-conference mentoring sessions were held in which each novice clinician presented a case study. Data were collected from pre- and post-participation surveys and post-participation focus groups. Data were analyzed using a mixed-methods phenomenological approach.

Results: Four themes emerged from the novice qualitative data: improved confidence, enhanced critical thinking, appreciation of the structured design and accessibility to peers and mentors. The quantitative data revealed significant improvement in three confidence measures, improvement of 1.48 points on self-selected clinical goals, and 82% reported improved clinical decision-making.

Two themes emerged from the expert data: value of the model and viability. Expert clinicians found value in this mentoring model filling a need within the profession and in being viable on its own or as part of an educational program. All experts reported the intervention promoted professional growth and the ability to give back to their professional community.

The novices and experts rated their experience on average at 8.76/10 and all expressed interest in future mentoring programs.

Implications: Online small group international clinical mentoring is an effective strategy to provide clinical mentoring to promote confidence and critical-thinking skills. This research could provide a viable model that increases accessibility to clinical mentors and fills a need within the profession.

5.3 Introduction

Overview

Postprofessional education exists in many forms and is critical to the physical therapy profession. Postprofessional education programs offer the opportunity to acquire new skills and assure maintenance of previously learned skills (Chau et al., 2012). These programs foster professional growth through the obtainment and refinement of skills needed to help novice clinicians progress to skilled, confident clinicians—ultimately improving patient care (French & Dowds, 2008). Postprofessional education can include anything from a formal academic program to a weekend course. It can include components such as online programming, face-to-face classes, and clinical mentoring. Clinical mentoring is especially important for novice clinicians (Di Vito-Thomas, 1998). Novice clinicians report a desire for postprofessional education including clinical mentoring but many have difficulty accessing it due to time, expenses, and location of programs offered (Westervelt et al., 2017). Modern technology and globalization within educational settings can facilitate the development of new models of postprofessional education that can better meet the needs of today's clinicians around the globe.

Clinical Mentoring

Clinical mentoring is an important component of postprofessional education in physical therapy and other professions, and is defined here as "…a developmental relationship that is embedded within the career context" with particular emphasis on career and psychosocial development (Ragins & Kram, 2007, p. 5). Clinical mentoring is particularly important for novice physical therapists (PTs) who are still developing their skills and face insecurity with challenging patients (Di Vito-Thomas, 1998). It has been shown to benefit novice PT clinical decision making in acute care, pediatric, and inpatient rehabilitation settings (Carthas & McDonnell, 2013; Stewart & Carpenter, 2009; Wainwright, Shepard, Harman, & Stephens, 2011). Furthermore, recent research has identified the desire for mentorship to be universal in two regions of the world and found that many PTs viewed access to a mentor as a primary reason for wanting to obtain more education (Westervelt et al., 2017). For new PTs, the first few years of practice is a time for "continued development of professional identity, knowledge base, clinical reasoning and decision-making skills" (Hayward et al., 2013). PTs experience stress and insecurity

transitioning from student to practitioner (Duchscher, 2009), but these feelings can be mitigated by the introduction of a clinical mentor. This mentor can help the novice PT adapt to their new position (Solomon & Miller, 2005) which is ultimately important for job satisfaction and retention within the profession (Ragins & Kram, 2007). PTs in their first year of practice focus more on learning in context, expansion of skills, and gaining confidence; while those in their second year of practice still focus on increasing confidence, they also engage in collaborative exchanges with their colleagues on complex cases (Hayward et al., 2013). At both stages, PTs benefit from mentoring, even if they may focus on different aspects of practice (Wainwright et al., 2011).

Barriers

Though there exists a clear desire among novices to obtain postprofessional education, including mentoring, several obstacles limit PTs from continuing their training. In Australia, Canada and the United States, the most prevalent barriers to obtaining postprofessional education have been found to include lack of access due to geographical location, high costs, and a lack of time (Sran & Murphy, 2009; Westervelt et al., 2017). One way clinicians can access mentoring in the USA is through a formal postprofessional residency program. These programs are designed to promote skill acquisition and to advance clinical decision making skills, thereby propelling a therapist from a novice to a clinical specialist (Hayward et al., 2013). However, residencies are costly, often require relocation and take time; as a result, the majority of clinicians do not go on to receive to postprofessional education following graduation (Westervelt et al., 2017).

Online mentoring / technology advances in PT and other professions

With technology advances and globalization of physical therapy education, new innovative solutions are available that could overcome the barriers to obtaining mentoring. Online mentoring exists in many models, and can include emailing, video conferences, and document sharing. Benefits of online mentoring can include quick responses, lack of a location restriction, and lower costs (Lipscomb, 2010). Online mentoring has been implemented in a variety of health care professions, including nursing and medicine (Harris, Birk, & Sherman, 2016; Masny, Ropka, Peterson,

Fetzer, & Daly, 2008; Pindyck, Kalishman, Flatow-Trujillo, & Thornton, 2015; Wood et al., 2016). Shifting mentoring online offers the additional possibility of international education (Lattanzi & Pechak, 2012c; Plummer & Nyang'au, 2009). International online mentoring through video-conferencing has already been shown to be highly effective at preparing nursing students for diverse learning environments and global interactions (Daley, Spalla, Arndt, & Warnes, 2008), but has yet to be studied in the physical therapy profession.

International collaboration in Physical Therapy

International collaboration is valuable, as it prepares clinicians to work in an increasingly global environment. Among other benefits, fostering international collaborations in physical therapy can facilitate knowledge translation, prevent repeated experiments, and improve quality of care around the world (Wees et al., 2011). International collaborations have also been rated as a highly effective teaching strategy (Westervelt, Ellis, et al., 2016a) and are promoted in entry-level curriculum by the Commission on Accreditation in Physical Therapy Education (Commission on Accreditation in Physical Therapy Education, 2014). Lattanzi et al. further identified video-conferencing as one of the main ways Doctor of Physical Therapy (DPT) programs currently prepare students to be globally aware and recommended more research into the best methods to promote collaboration (Lattanzi & Pechak, 2012c). Little research has been done to support the use of similar international learning opportunities for practicing novice clinicians.

Research question

Clinical mentoring facilitates the transformation of novice health care professionals, including PTs, into confident and independent providers. Unfortunately, barriers can prevent novices from accessing mentors. Advances in technology and globalization of physical therapy education create opportunities for new, more accessible models of providing clinical mentoring. There has been a recent call in the literature for education research in Physical Therapy(Jensen et al., 2016). Therefore in response to this call the objectives of this research were to examine the feasibility and the effects of providing online clinical mentoring to small

groups of international PTs treating patients with spinal dysfunction in an outpatient musculoskeletal setting.

5.4 Methods

Participants and Recruitment

This study was approved by human research ethics committees in the United States of America (USA) and in Australia (AUS). Sixteen participants were involved, including 4 clinical experts and 12 novices. In order to minimize variability of the mentors, 5 clinical experts were selected and invited to participate based on their level of clinical and teaching skills. All invited clinical experts had completed a postgraduate diploma or above from the same University in New Zealand in Spinal Manipulation, had more than 20 years of clinical experience in an outpatient musculoskeletal setting, and had teaching experience at both the entry level and postprofessional level of PT education. Of the five clinical experts who were invited to participate, four accepted and participated in the study; the PI was one such participant, as is common in phenomenological studies (Ehrlich, 2003). The high level of training and qualifications combined with participation in an online training session with the PI prepared mentors and familiarized mentors with the protocol, procedure and expectations.

Email invitations were sent out to the two most recent years of alumni from one Australian and one United States Doctor of Physical Therapy (DPT) program to recruit novice clinicians. Email contact lists were obtained from academic directors at both Universities. Recruitment letters were emailed to both groups of alumni a total of three times. Interested clinicians replied via email directly to the PI, were screened for eligibility, and the first 12 novices to meet the inclusion and exclusion criteria (Appendix 1) were accepted into the study upon completion of informed consent.

Study Design

This was a phenomenological, mixed-methods study. Participants were assigned to mentoring groups according to availability. Each group consisted of one clinical expert and an international group of 3 novices. Over the course of 6 weeks, four 1-hour group clinical mentoring sessions were held using Blackboard

Collaborate video conferencing system (Blackboard, 2010). De-identified case studies focusing on patients with spinal dysfunction were presented by the novice clinicians during each video conference call. Novices chose challenging cases from their current patients and shared an outline with all members of the group 2 days prior to the conference call. This case study, group discussion format was used to promote learning through collaborative discussion of clinically relevant complex cases.

Data Collection

Figure 5.1 summarizes methods and data collection in this study. Data from the clinical experts were collected from a pre-participation survey, a post-participation survey, and a post-participation focus group discussion (Appendix 20). Data from novices were collected through two pre-participation surveys, one post-participation survey, and a post-participation focus group discussion (Appendix 21). The second pre-participation survey was administered one week after the first. It consisted solely of the two scales described below, and was used to assess test-retest reliability.

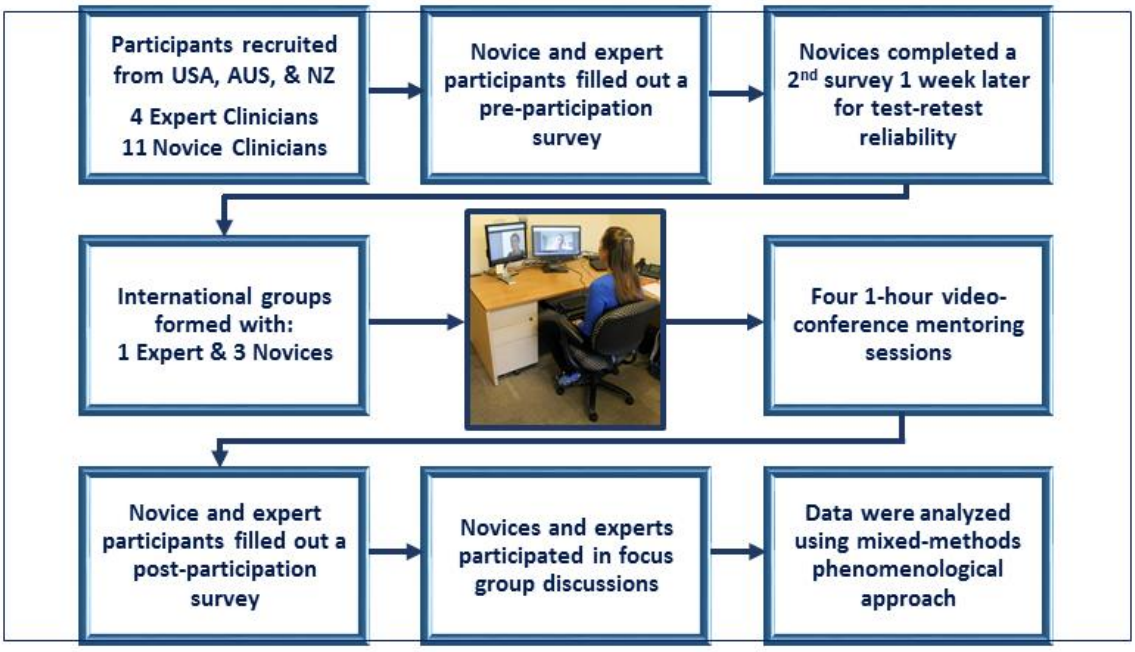

Figure 5.1 **Methods**

The two scales utilized in this study were adapted from existing and validated outcome measures. The Clinician Confidence Questionnaire for Patients with Spinal Pain was based on the self-efficacy questionnaire used in a study on rural pediatric clinicians in Australia (Minisini, Sheppard, Jones, & others, 2010). Self-efficacy is generally defined as one's belief in one's ability to accomplish a task, even in the face of adversity (Pajares, Urdan, Zimmerman, & Cleary, 2006). While this is similar to self-confidence, it is more task-specific and many believe it can only be accurately measured in specific contexts (Pajares et al., 2006). The question items were therefore modified to assess skills required for PTs working in an outpatient musculoskeletal setting treating patients with spinal pain. The scale was also changed from a five-item ordinal scale to a ten-point Likert scale, which better approximates a continuous linear variable and allows for parametric analysis.

The Clinician-Specific Outcome Scale was based on the Patient Specific Functional Scale (PSFS) (Horn et al., 2012) and modified to be relevant for a clinician establishing goals related to skills that can be improved through mentoring. The PSFS has been shown to be a reliable measure and was initially developed to assess the global construct of perceived level of disability in patients with several different types of musculoskeletal impairments (Stratford, Gill, Westaway, & Binkley, 1995). The Clinician-Specific Outcome Scale was similarly developed to give novices an opportunity to identify personally relevant skills to self-evaluate and focus on improving through their participation in this mentoring program.

Members of the research team facilitated four novice focus group discussions without the clinical experts present. One focus group was also held with all four clinical experts. Audio recordings were made from the focus group discussion, which were then transcribed and analyzed.

Prior to study implementation, the survey questions and focus group questions for both novices and experts were reviewed by four senior research academics to ensure content validity. Changes were made as recommended by these reviewers. All surveys were then administered on Lime Survey(Team, L.P., 2012). Each survey was sent via a closed hyperlink that could only be accessed by the invited participants.

5.5 Results

Novices

Quantitative Analysis and Results

Twelve novices were recruited; one left the study due to computer technical issues that inhibited participation. The sample size for pre- and post-intervention surveys was therefore 11. Out of the 11 participants, only 10 completed the second test-retest survey prior to the study. Test-retest reliability of the Clinician Confidence Questionnaire for Patients with Spinal Pain was assessed by paired t-test; 11 of the 13 questions were found to have no significant differences between the test-retest administrations, while two were found to have significant differences limiting their usefulness (n=10). These were question 4 (p=.025) and question6 (p = .025) (see Table 5.1).

To examine the effect of the mentoring intervention on novices, the full administration of the survey was compared to the post-intervention survey. The novices' answers to the 13 questions of the Clinician Confidence Questionnaire for Patients with Spinal Pain were evaluated independently via paired t-test. Four of the questions showed significant improvement (Table 5.1). Question 6 was previously found to be unreliable; therefore, the significant difference may not be an indication of a true change for this question. Hierarchical linear regression was used to determine whether categorical variables were significant predictors of novice outcomes on the Clinician Confidence Questionnaire for Patients with Spinal Pain. Categorical variables examined included gender, year of graduation, USA or AUS alumni, primary practice setting (rural, suburban, or urban), % of clinical patients with spinal pain, and whether or not physical therapy was a participant's first career. These variables were selected because all groups within them were greater than, or equal to, n=3. No variables were found to significantly change the model, indicating that the effects were not limited to a subset of participants.

Comparison of pre- and post-intervention scores on the Clinician Specific Outcome Scale revealed that participants improved an average of 1.48 points across all self-selected goals (SD=1.22). When each participant's three goals were collectively analyzed, novices improved significantly on their combined score (p=.002). Every novice improved in at least one goal, except for one who stayed the

same on all three. The remaining post-intervention survey questions asked novices about overall impressions of the experience and opinions on postprofessional education following the intervention. Responses are summarized in Table 5.2.

Qualitative Analysis and Results

Researchers read the transcripts from all four group discussions and the narrative responses from the survey questions and analyzed them for common themes. Five researchers independently identified the main themes before reviewing them as a group. Seven themes were identified by researchers from the novice focus groups and after a discussion, researchers came to a consensus on the four strongest themes: confidence, critical-thinking, accessibility, and structured design (Table 5.3). Qualitative study rigor was assured through achievement of fittingness, credibility, audibility, and saturation of the data (Figure 5.2). Qualitative and quantitative data from novices aligned and are triangulated in Figure 5.3.

Table 5.1

Novice Physical Therapist Self-Efficacy Tool (n=11)

Question	Mean difference (Post-Intervention-Pre-Intervention) *(SD)*	P-value
1). I feel adequately prepared to undertake a caseload of patients with spinal pain.	0.73 *(1.35)*	0.104
2). I feel that I am able to verbally communicate effectively and appropriately with patients with spinal pain.	0.45 *(1.64)*	0.378
3). I feel that I am able to communicate in writing effectively and appropriately about the patients with spinal pain on my case load.	0.91 *(1.70)*	0.107
4). I feel that I am able to perform subjective assessments for my patients with spinal pain.	0.73 *(1.35)*	0.104
5). I feel that I am able to perform objective assessments for my patients with spinal pain.	0.64 *(1.29)*	0.132
6). I feel that I am able to interpret assessment findings appropriately for my patients with spinal pain.	1.18 *(1.66)*	0.040*
7). I feel that I am able to identify and prioritize problems for my patients with spinal pain.	1.45 *(2.11)*	0.046*
8). I feel that I am able to select appropriate short and long term goals for my patients with spinal pain.	0.36 *(1.21)*	0.341
9). I feel that I am able to appropriately perform treatments for my patients with spinal pain.	1.36 *(2.06)*	0.053
10). I feel that I am able to perform discharge planning for my patients with spinal pain.	1.18 *(1.83)*	0.058
11). I feel that I am able to evaluate my treatments for my patients with spinal pain.	1.27 *(1.79)*	0.040*
12). I feel that I am able to progress interventions for my patients with spinal pain.	0.73 *(1.49)*	0.136
13). I feel that I am able to deal with the range of patient conditions which may be seen with the patients with spinal pain on my case load.	1.45 *(2.02)*	0.038*

Clinical Mentors

Quantitative Analysis and Results

All 4 expert participants completed the post participation survey; results are summarized in Table 5.2.

Qualitative Analysis and Results

The mentor focus group discussion transcript was analyzed. Researchers initially identified thirteen themes from the single mentor focus group transcript. The transcripts were re-evaluated by the 5 researchers independently and two broader themes were agreed upon: viability and value of the model: fills a need (Table 5.4). Qualitative and quantitative data from experts aligned and are triangulated in Figure 5.3.

Table 5.2

General Survey Results

Question	Novice Clinician Results (n=11)	Clinical Expert Results (n=4)
Please rank your interest in postprofessional PT/physiotherapy education. (5 = I am considering attending a postprofessional program, 4 = very interested, 3 = somewhat interested, 2 = a little interested, 1 = not interested)	2/11: somewhat interested (18.18%) 9/11: very interested (81.82%)	N/A
What barriers prevent you from obtaining postprofessional education?	11/11 "cost" (100%) 9/11 no benefit from employers perspective (81.82%) 7/11 "time away from work" (64%) 6/11 "access to the classes I am interested in" (55%)	N/A
Please rate your overall impression of this experience. (1 = terrible, 5 = neutral, 10 = excellent)	Average of 8.27	Average of 9.25
Was the group size of 3 appropriate?	11/11 "yes" (100%)	N/A
Did participation in this project alter how you treated or would have treated the patient you discussed?	11/11 "yes" (100%)	N/A
What did you gain from participating in this research project? Select all that apply: increased awareness of international PT, improved clinical decision making, improved treatment session planning, new ideas for treatment, interest in attending more manual therapy education, other.	9/11 "improved clinical decision making" (81.82%) 10/11 "new ideas for treatment" (90.91%)	N/A
Was it useful to establish goals at the beginning of this project?	11/11 "yes" (100%)	N/A
Would you participate in a distance mentoring program again? (Yes, no, maybe)	10/11 "yes" (90.91%) 1/11 "maybe" (9.09%)	N/A
Do you feel your participation in a mentoring program such as this one will have long term practice implications for you?	11/11 "yes" (100%)	N/A

Table 5.2 Continued

Question	Novice Clinician Results (n=11)	Clinical Expert Results (n=4)
Was the group size of 3 appropriate?	11/11 "yes" (100%)	100% "yes"
Did participation in this project alter how you treated or would have treated the patient you discussed?	11/11 "yes" (100%)	N/A
What did you gain from participating in this research project? Select all that apply: increased awareness of international PT, improved clinical decision making, improved treatment session planning, new ideas for treatment, interest in attending more manual therapy education, other	9/11 "improved clinical decision making" (81.82%) 10/11 "new ideas for treatment" (90.91%)	N/A
Was it useful to establish goals at the beginning of this project?	11/11 "yes" (100%)	N/A
Would you participate in a distance mentoring program again? Yes, no, maybe	10/11 "yes" (90.91%) 1/11 "maybe" (9.09%)	100% "yes"
Do you feel your participation in a mentoring program such as this one will have long term practice implications for you?	11/11 "yes" (100%)	N/A
In your opinion what would be the ideal total length of time for a mentoring program?	7.18 months range: 1-24 months	3.75 months 3- 3 months 1- 6 months
Would you have liked more training before starting?	9/11 "no" (81.82%)	100% "no"
In your opinion, what is the most important thing for a novice clinician to focus on to gain confidence and efficacy in his or her clinical practice? Was this supported in this study?	9/11 "yes" (81.82%)	100% "yes"
Years experience	N/A	Average of 26.75 years 100% over 20 years experience
Do you believe you'd benefit from a mentor yourself?	N/A	100% "yes"

Table 5.3

Novice Quotes & Themes

Theme	Quotes
Confidence: **A sense of assuredness that the evaluation and treatment was appropriate and beneficial for the patient**	*"Just being able to share ideas and expand on your sort of thought process, I think that was just hugely valuable. I think there's an element of confidence that comes from doing things like this when you, sometimes, you do just need to see that other people are doing similar things as you, and that is of great value as well." (Participant #3)* *"The most valuable aspect for me was the chance to form this interaction with peers, people who are also recent graduates, and kind of see how they are doing and see how I'm doing and know that I'm on the right track." (Participant #4)* *"Our discussions made me more confident in my current skills and clinical decision-making. After this mentorship program I now have some goals for myself for this coming year." (Participant #5)* *"The most valuable outcomes, I would say, were the increased confidence in clinical decision making." (Participant #7)*
Critical Thinking **The ability to reflect upon and analyze information gathered**	*"I learned a lot more than just diagnosing and treating spinal pain. I learned clinical decision-making skills that have already helped my practice for many different patients." (Participant #5)* *"It's just nice to see other people's views of how they would attack an issue or would treat someone it's just having a different view so I can kind of get out of my own […] way of thinking of something and try to look at it a different way to help a patient." (Participant #8)* *"I had questions about patients – about a patient – and I was able to discuss them and come up with possible solutions and then test them out. It wasn't just theory based." (Participant #6)* *"(The most valuable outcome was)…collaboration with an expert and group members to provide new treatment ideas directly applicable and enhance clinical reasoning." (Participant #4)*

Table 5.3 Continued

Theme	Quotes
Access **Ease of access to a clinical mentor and peers at a similar stage of professional development**	*"It definitely provides a level support that most new grads are probably missing out on, especially if they are working in a private practice setting." (Participant #4)* *"It's just online, which is really nice. You don't have to leave your home. You don't have the cost of travel, which is so burdensome for most work that you do continuing education wise. Which is why this is just so great, and to come upstairs and talk to someone that has awesome skills." (Participant #9)* *"I just don't have anyone to sit down with for an hour and in depth discuss things. It's nice to have that structured time to be able to do that…having that access to someone's mind, where they're not thinking about a hundred different things while they're at work, they're here to focus with us, is just phenomenal for us being out so little into being PTs." (Participant #9)*
Structured Design **Perceived benefit from having a scheduled time and case study format for meeting with mentoring groups**	*"Particularly in the treating clinic, it's very hard to give yourself some time to think about reflecting, thinking about what you did right and wrong with patients…And a mentorship… having clear structured time to sit down and reflect…(is) beneficial." (Participant #11)* *"I liked how we rotated through and discussed a different topic every week…it really gave you something different every week to focus on." (Participant #4)* *"It was very enlightening to receive advice and feedback from other countries and understand how the variety in our schooling has lead to different ways to conceptualize and interpret the same clinical conditions." (Participant #5)* *"I ended up going back through a lot of the notes from our second orthopedics class and I started looking through the PowerPoints again." (Participant #4)* *"I think from the theoretical learning and decision making side of it you can really benefit greatly from the distance video chatting." (Participant #8)*

Figure 5.2 **Phenomenological Study Design**

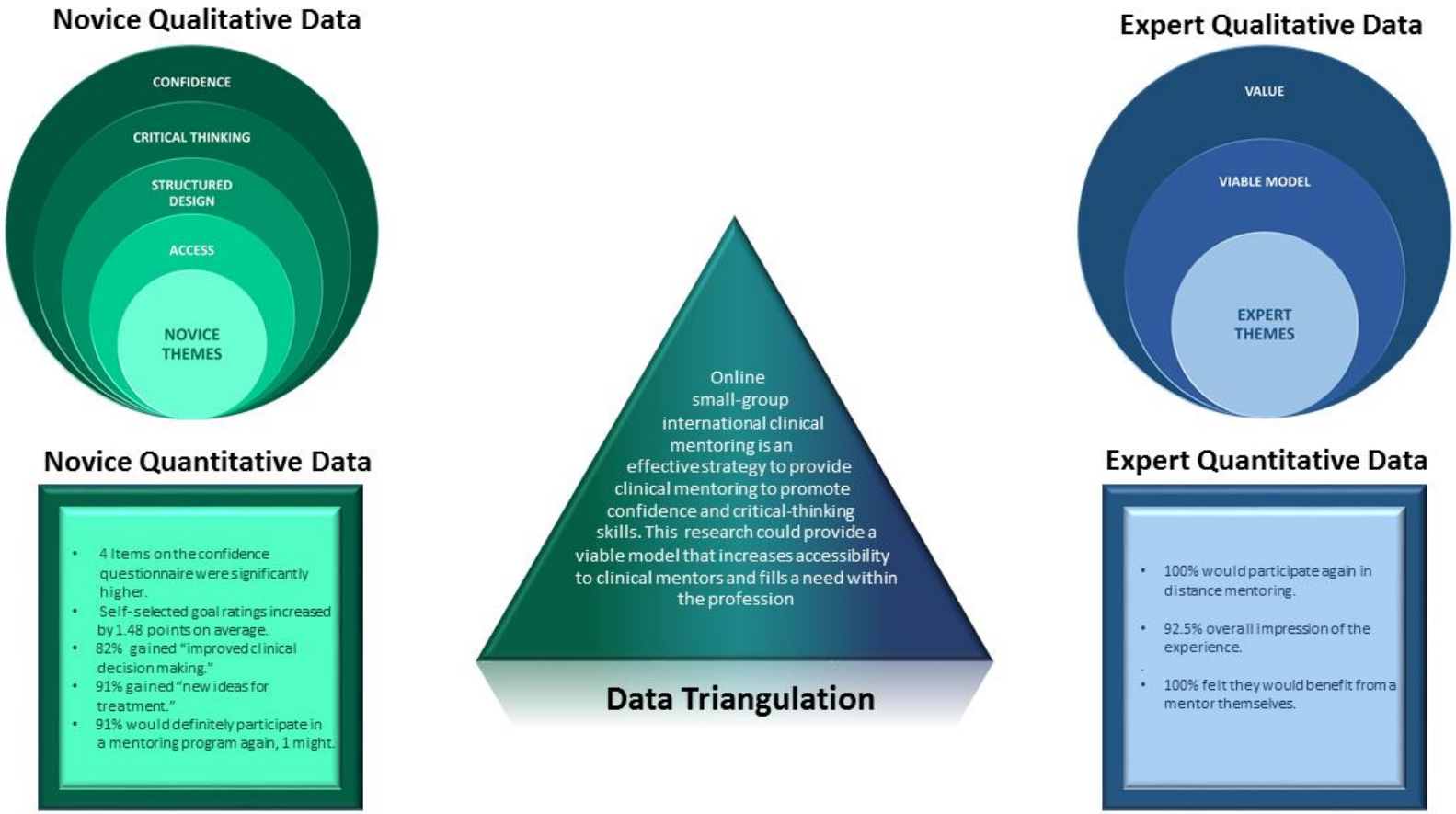

Figure 5.3 **Data Triangulation**

Table 5.4

Clinical Expert Quotes/Themes

Theme	Quotes
Viable Model **A model that could be very effective on its own or as part of other education programs**	"(This clinical mentoring model) could be beneficial for universities, associations or private organizations." (Participant #102) "I think that this is as valuable as a standalone package, but I think reinforces what we teach on our courses...it can only enhance that. And so, having it as a part of a bigger package as well is a logical sort of progression of it. But I don't think it has to be…I think I'd be happy to do the same thing as a standalone package." (Participant #104) "Mentoring, especially, is so good over the internet. Right, and all of us have said that that cross-continent sort of discussions has been really…it has been really fruitful." (Participant #102) "I think (this) provided something that many new practitioners could get a lot out of without a huge investment in time, or time away from the clinic." (Participant #103) "It's certainly very marketable to the up and coming professions in other countries, as well as something that could be used in universities or different associations or private stuff. Like you said, once you've done the practical you could then have the mentoring." (Participant #102) "Because that's where we're really falling down, in my mind. As far as, I take my weekend class, but I don't change my clinical practice. So, if this was part of a bigger model that was, you know, an online theory class, face to face class and then, by the way, you can also buy this clinical decision making section that goes on." (Participant #101) "Like it's just how, how applicable it is. It's exciting!" (Participant #102)

Table 5.4 Continued

Theme	Quotes
Value of the model: Fills a Need **Beneficial to novice clinicians and the profession**	"This model is extremely valuable to the remote/rural physiotherapist." (Participant #103) "If people come in, come out, and they go straight into their own business and then haven't got anyone mentoring them they're very average physios after a few years." (Participant #102) "I totally agree that if we're going to change practice, you need some sort of follow up… (Currently) It's a weekend course and then it is all over done with. And this would be a great way of reinforcing those learnings." (Participant #104) "One of the other things that I think is valuable to think about is that many times these novice practitioners have mentoring options, but it's within their work place. And they sometimes feel a little intimidated. They don't want to go ask the person who signs their pay check with this question, because, well, this person might not sign that pay check anymore because some of them are dumb questions." (Participant #103) "It's great. I mean, there's less and less people wanting to go and take massive amount of time off and do study. And…you don't want to lose that upper end of our profession." (Participant #102)

5.6 Discussion

Overview

In response to the recent call from the American Council of Academic Physical Therapy Task Force on Education Research (Jensen et al., 2016), the authors designed and tested a model of online international clinical mentoring for novice PTs who work in an outpatient musculoskeletal setting. Results from this research demonstrated that both novices and experts benefited from their involvement in this program and it is a viable model for post-professional mentoring in this setting. The qualitative themes that emerged from the data aligned with the quantitative findings and informed an understanding of the participants' overall experience.

Novice Themes

Confidence

The theme of "confidence" reflected the novices' improved self-efficacy in the clinic. Participants felt that the opportunity to discuss cases with peers was particularly effective at reinforcing what they are already doing well. One participant stated that she benefited from being able to "…see how they are doing and see how I'm doing and know that I'm on the right track, personally, I think that validation of being able to bounce ideas off of each other and really (helps me to) know that I'm doing the best I can at this point with my clinical knowledge for my patients."(Novice 4) These reflections were supported by the increases in confidence found on the four items of the Clinician Confidence Questionnaire for Patients with Spinal Pain and the improvements on their self-selected goals.

Having confidence is a key step towards being a successful independent practitioner (Black et al., 2010), and as direct access to physical therapy becomes more prevalent, clinicians around the world will need to confidently demonstrate advanced clinical decision making with a wide variety of patients (Wainwright, Shepard, Harman, & Stephens, 2010). The novices from both countries reported needing confidence, with one novice saying, "most new clinicians, despite where they have received training, will need to overcome their own insecurities as new therapists. Building confidence seems to be an important theme as a new clinician." (Novice 4)

Critical Thinking

Novices also emphasized that they were particularly more confident in clinical-decision making in the clinic, which was one part of the overall theme of "critical thinking." In addition to collecting and analyzing data in the clinic, critical thinking also encompassed the broadening of perspective that many novices experienced. Previous studies have found that experience alone is not sufficient in increasing clinical decision making, but reflection is essential (Black et al., 2010; Hayward et al., 2013; Wainwright et al., 2011). The case-study format of mentoring sessions in this study exposed novices to new viewpoints, which promotes reflection on previous knowledge and thinking processes while expanding repertoire for treatments.

This theme was also supported by novice responses on final surveys, where they reported gaining "improved clinical decision making" and "new ideas for treatment." In addition, the four items on the Clinician Confidence Questionnaire for Patients with Spinal Pain that novices showed significant improvement in arguably involve more critical thinking than many of the other items, further reinforcing the impact of this program on novices' perception of their problem-solving abilities.

Accessibility

Accessibility referred to novices' appreciation for the way the model allowed them to access a mentor in a convenient way when they may not have one available in their practice. Novices in this study found that this online mentoring model provided solutions to overcome many of the identified barriers related to access. Specifically, the model required minimal time commitment, allowed for flexible schedules, and eliminated the need for costly travel. In addition, this experience enabled clinicians to communicate with individuals in their own country as well as opened the door for international collaboration and ensuing cross-pollination of ideas. One participant stated, "I just think that it makes it a little bit more interesting to see what people internationally are doing…" (Novice 9)

Availability and access to support and opportunities for professional growth often influence a practitioner's decision to relocate to, stay in, or leave a rural community (Moran et al., 2014). Lack of support in rural areas can be especially intimidating for novices. The model presented here therefore holds particular

promise for benefitting rurally practicing clinicians, where few opportunities exist to collaborate with other professionals. One participant noted, “We have a lot of rural places… When you go out to those sorts of places you have to be everyone. You don’t have a lot of support in those areas, so I think something like this would just be invaluable.”(Novice 3) Providing online mentoring could lessen some of the challenges in recruiting and retaining clinicians in rural practice locations.

Structured Design

Novices appreciated many aspects of the program’s structured design and emphasized that the regular, formal nature of the mentoring and the specific components of the study design, including the video-format, the case studies, and the inclusion of participants from different schools and countries, enhanced their experience. Many noted that although they may have colleagues in their clinic that they confer with about complex cases, scheduling and day-to-day demands do not always allow for informal mentoring or collaboration. The regular, scheduled time to reflect, discuss, and learn new concepts was therefore highly valued among novices. Previous research suggests that novices in their first two years move from needing reinforcement of basic skills to desiring more opportunities to discuss patient cases with peers or mentors(Hayward et al., 2013; Wainwright et al., 2011). The group structure of the mentoring sessions applied this theory and added an important element to traditional 1:1 mentoring by allowing these new PTs to bounce ideas off of others in a low-pressure environment, with an expert present to provide guidance.

Mentors

Viability of the model

Experts reported that this online distance mentoring model was very effective as a stand-alone model. They also suggested many other possible applications of the model, including using it to supplement continuing education classes. Clinicians could elect to receive online mentoring following a face to face continuing education class in order to promote a change in clinical practice patterns. Another application for this model would be to increase intra-and inter-professional international collaborations. These types of collaborations could encourage clinicians to develop global perspectives in healthcare, and also help to unite the profession internationally

and promote shared knowledge and resources. One expert felt this model could also be useful in academic settings to help address the rising difficulty of finding clinical placements for postgraduate students. A postgraduate student could work in a clinic of their choosing, and mentoring could be provided remotely by a faculty member at the University or associated clinician who is intimately aware of the postgraduate curriculum and learning objectives in order to facilitate a more standardized learning outcome.

Value of the model: fills a need

Expert clinicians found great value in this experience for novices, for themselves as mentors, and for the profession as a whole. Experts particularly felt that supporting the transition from students to independent practitioners through mentoring could raise overall standards of practice. Novice responses to the final survey confirmed expert perception of value, as 100% of novices reported that the mentoring sessions changed the way they treated their patients and that participating in a mentoring program like this one would have "long term clinical implications" for them, indicating both perceived immediate value gained and potential for career-long benefits.

As discussed above, despite great clinician interest in residency programs in the USA multiple barriers exist to these and other academic postprofessional programs that can make them inaccessible to many. However, clinical experts agreed that online clinical mentoring could be viable as a standalone model or as an addition to an existing program. Both applications promote opportunities for clinicians seeking to advance within the profession who lack financial or geographical access to formal postprofessional programs.

This model also filled a need by generating a forum in which international collaboration and dialogue may occur. One expert clinician stated "[International collaboration] added to the richness of the conversation and the similarities in issues faced by clinicians around the world was very interesting. Models such as this can really help to strengthen the profession globally" (expert 101).

Lastly, expert clinicians also expressed an interest in having their own mentors, and noted that when faced with a complicated patient, they still relied on collaboration with other colleagues to think about the case and discover new treatment ideas. The desire for collaboration does not end with experience. On the

contrary, experienced clinicians appear to have a recognition of the importance of mentoring and professional collaboration.

Study Limitations and implications for further research

This study utilized a small sample of PTs from only 3 countries, and provided intervention over a relatively short time period of 6 weeks to all participants, with no control group for comparison. Novices were graduates from either a DPT program in AUS or the USA. This was beneficial in that novices' educational training appeared comparable, providing for ease of case-based discussions amongst all novices. However, due to the small sample size and similarity of programs, it is unknown if this model would perform as well if the members of the group came from very different educational backgrounds.

Participants for this study voluntarily responded to an invitation letter which could introduce a selection bias. This was confirmed in responses to the survey where all novices noted that they were "somewhat interested" or "very interested" in postprofessional education.

Additional research

Future research is recommended to see if this model of international online distance clinical mentoring in small groups could support other groups of PTs including clinicians working in remote settings. It is also recommended that additional research examine the optimal length and frequency of sessions, matching of mentors and mentees and the willingness of senior PTs to be mentors. Furthermore, examination of the effects of such a mentoring model on clinical practice through tracking patient outcomes or other objective measures of PT performance is needed.

5.7 Conclusion

This model of international online small group clinical mentoring appears to be an effective model to provide needed support for novices in their first 2 years of practice. This is a period of rapid professional growth as one transitions from being a student to being a novice practitioner to being a confident independent practitioner. This model can help build confidence and promote advanced critical thinking skills that are needed to work with complex patient populations such as patients with spinal

pain. Distance clinical mentoring is a model that alleviates some of the most commonly reported barriers to obtaining postprofessional education, namely cost and accessibility. International online mentoring can open up opportunities for international collaborations encouraging a sharing of resources and ideas around the world as we work in a truly global health care arena. Ultimately, as emphasized by Jensen et al, "the profession has a moral obligation to prepare clinicians, educators, and future researchers to meet the health care needs of clients, society and the communities in which people live." (Jensen et al., 2016, p. 1883) By making clinical mentoring accessible to more clinicians, we can gradually raise the level of training within the profession and everyone will benefit.

Implications

Online small-group international clinical mentoring is an effective strategy to provide clinical mentoring to promote confidence and critical-thinking skills. This research could provide a viable model that increases accessibility to clinical mentors and fills a need within the profession.

5.8 References

References for this study can be found in the full reference list in chapter 7 of this thesis.

5.9 Manuscript Status

This manuscript has been submitted to the *Journal of Manual and Manipulative Therapy* and is presently under review.

A portion of this work has been accepted for a platform presentation at the American Academy Orthopaedic Manual Physical Therapy Annual Conference in Salt Lake City, Utah October 18-22, 2017.

A poster of this work was presented at the *Zeigler Research Forum* at the University of Vermont in May 2017 (Appendix 22)

CHAPTER 6.
DISCUSSION

6.1 Preface

This final chapter provides a summary of the full body of work for this thesis and links key findings with aims. It summarizes 5 new pieces of research that help fill the recent call for physical therapy education research. This chapter also includes a rich discussion of how this body of research adds to the existing literature and provides direction for advances within postprofessional physical therapist education. Lastly, this chapter identifies, study limitations, practical applications, areas of future research and finally overall thesis conclusions.

6.2 Summary of Key Findings

The first aim of this thesis was to review and analyze current entry-level PT education globally. This aim was addressed in the first study and was an important starting point for this body of work, as understanding entry-level education is an important foundation which then allows for the study of postprofessional education. Variation in the number of programs, duration of programs, and numbers of programs per population were seen around the world. Encouraging steps towards standardization, especially related to the goals of all entry-level programs being 4 years in duration and at the university level, are being made. Close examination of the data for this project revealed that more globalization and international collaboration in education could benefit the profession as a whole by reducing variation in PT education, thereby preparing new professionals to enter a truly global health care arena.

This foundational knowledge allowed for the initiation of the second chapter, which was also data-gathering and foundational in nature. The second aim of this thesis, to review and compare current PT postprofessional education in the USA and AUS, was addressed in this chapter. By comparing the USA and AUS specifically, Chapter 2 therefore narrowed the focus down to two key countries. Australia was found to be ahead of the USA in the development of robust academic postprofessional programs capable of successfully generating a subset of PTs with advanced skills and clinical decision making. Unfortunately, the concern that a

dwindling number of students in Australia's postprofessional programs would force these programs to close was substantiated by this project. Six programs in Australia closed during the six month data collection period alone. Clearly, this is reason for concern for the profession in AUS, but this trend should also concern professionals around the globe. Australia, and the world as a whole, needs PTs with postprofessional qualifications, as this group of clinical experts are often responsible for advances in the profession. The USA, in particular, should be studying, and learning from, this trend in AUS in order to keep the forward momentum going in their postprofessional education. It is an imperative time to collaborate on issues related to postprofessional education common to both countries, such as the existence of educational desserts, the need for more universal accessibility to postprofessional education, and current focus areas of programming in musculoskeletal and sports and the lack of programming in geriatrics. Centralizing information available at the program level for postprofessional education in AUS and the USA created a platform for discussion to begin to address the universal challenges in postprofessional programming. This chapter prepared the foundation for the next chapter, which looked into providers' wants and needs for postprofessional education.

The third chapter addressed the thesis aim of synthesizing the needs for postprofessional PT education in two different geographical regions of the world. The similarities in findings from PT participants in the USA and in AUS were striking. Despite the high interest in postprofessional education, especially in recent graduates, only 10% of respondents from both groups had completed a formal postprofessional educational program. Reported barriers to access were universal between both groups and correlated with the findings of educational deserts in Chapter 2 clearly demonstrating that the profession needs to be more innovative in the delivery of postprofessional education in order to increase accessibility and affordability. The reported interest in postprofessional education, especially among recent graduates, was not surprising; the transition from student to confident independent provider can be stressful and should be a period of significant growth in confidence and critical thinking skills, if the novice is given appropriate support. This is where the role of the clinical expert becomes incredibly important. The skill set that comes with years of clinical experience and additional education is one that is valuable and should be recognized as such. Pairing novices with experts helps

support the novices while providing recognition and the feeling of value for the experienced clinician. The findings of this study call upon the profession to work together with international partners to find and implement solutions to the identified universal barriers to postprofessional education.

The fourth chapter drew heavily upon the findings, issues, and needs identified in the first three chapters. This chapter involved the design, implementation, and testing of a model of international collaboration in PT education. This chapter addressed the fourth aim of this thesis, which was to establish and analyze a model of international collaboration experience between two well-regarded institutions with DPT programs. The international collaboration proved to not only be feasible but also beneficial for the traveling participants, the hosts, and the teaching faculty. The model was found to promote learning, collaboration and a greater understanding of the "other", all of which are important aspects that help prepare PTs to work in an increasingly global environment. The benefits of international collaboration identified in Chapter 4, combined with the barriers and needs for postprofessional education identified in Chapters 2 and 3, led to the ultimate design of the final chapter in this thesis.

The final chapter for this thesis was a summative project designed to address the fifth aim, which was to evaluate an innovative international advanced clinical decision making mentoring program for novice clinicians. The Blackboard Collaborate video conference system allowed for easy connection between a small group of novice clinicians from AUS and the USA and expert clinicians from AUS, New Zealand or the USA. Conversing in a structured format with a clinical expert and with other PTs at a similar stage of professional development promoted confidence and improved critical thinking for the novice PT. The findings of improved confidence and critical thinking were supported with both qualitative and quantitative data and triangulated to further provide strength to the findings. The expert participants found a real value in this model and felt it would fill a need within the profession not just to support novice clinicians but to support clinicians in other stages of professional development and other settings, such as clinicians working in rural or remote settings. They felt the model was viable both as a stand-alone entity to promote confidence and critical thinking skills and also as part of an existing educational model to promote changes in clinical practice after taking a continuing education class or a formal postprofessional educational program. Additionally, the

international aspect of this project brought a unique perspective to the experience that was appreciated by both the novices and experts by adding to the richness and globalization of the discussion. This provided an effective link back to the identified needs for future research identified in Chapters 1 and 2 for more standardization within PT education around the globe.

6.3 Study Limitations

The general limitations of this thesis include that the focus of study was quickly narrowed to two countries, the USA and AUS. It is therefore unknown if the same barriers to postprofessional education exist in other parts of the world, nor is it known if the models presented to address the issues identified would be as relevant or as successful in other parts of the world. For example, there are many countries that would benefit from sharing resources with more wealthy countries and having access to clinical experts around the world. However, these same countries are likely to also have issues with the access to technology and the internet to allow for international online clinical mentoring.

Another limitation of this thesis was the final study only being able to examine one aspect of postprofessional education, clinical mentoring. Although clinical mentoring was shown to improve confidence and critical thinking skills, we did not study motor skill acquisition, which is another integral component of postprofessional education for a clinical, hands-on profession such as physical therapy. Learning new motor skills was a theme identified in the fourth chapter by subjective report, but was not examined by a physical test or measure. In addition, actual changes in clinical practice were not objectively measured in either of the two model studies, but would be a fascinating and important area of future research.

6.4 Practical Applications for the Future

The future possibilities in postprofessional PT education are very exciting. The development and introduction of this innovative platform of international small group clinical mentoring addresses many of the needs of the profession. Table 6.1 provides a list of practical implications focusing on increasing education levels, sharing of resources and promoting collaboration.

Table 6.1

Practical Implications for International Small Group Online Clinical Mentoring

International collaboration
Clinical mentoring with an expert clinician
Interaction with peers at a similar stage of professional development
Improved accessibility to eliminate educational deserts
Support for clinicians transitioning from student to independent, confident clinicians
Improved job satisfaction
Improved job retention
Affordability by reducing the need to travel or enrol in a formal residency program to gain access to a clinical mentor
Sharing of resources internationally
Standardization in education
A higher educated workforce
Promoting changes in clinical practice patterns
Support to change clinical practice patterns after taking a continuing education course
Standardization in clinical mentoring for post professional students on clinical placement
Opportunity for inter-professional interactions
Advances within the profession

6.5 Recommendations for Future Research

This research has examined and proposed models of education to address the barriers of accessibility, cost and lack of standardization. These are important, but there are other factors that need to be examined and addressed to improve postprofessional PT education, such as incentives for professionals to pursue formal postprofessional training. Future research into incentives, including adequate recognition for postprofessional education within our profession, with employers, within the health care community, and among the public, is a critical component of successful postprofessional education.

Additional research is needed to examine the application of the model of international online clinical mentoring to other realms where PTs need support, such as rural or remote clinical settings. This model could also be applicable to other professions; future research is recommended to study the application of this model in other professions outside of physical therapy and inter-professionally.

A challenging but interesting area of future research is the examination of

patient outcomes. Additional research is needed to examine and report potential changes in patient outcomes when they are treated by physical therapists with higher levels of postprofessional education.

6.6 Conclusion

In conclusion, this thesis provides information about postprofessional PT education at the programmatic level and at the user level. It clearly identifies concerns and barriers to postprofessional education and provides practical useful solutions to issues of cost, accessibility and the need for greater international collaboration. Equally exciting to the new models presented here are the practical applications of this research in the future. The findings from this work can be used to advance the profession by eliminating educational deserts, providing support for novice clinicians or clinicians working alone in remote settings, improving job retention, helping clinicians incorporate new skills learned at a face to face continuing educational course into daily clinical practice, and standardizing clinical mentoring for postprofessional students on clinical placement, just to name a few. The future possibilities in postprofessional PT education internationally are very promising.

CHAPTER 7.
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CHAPTER 8
APPENDICES

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Appendix 1 Physical Therapy Education Around the Globe Poster

Physical Therapy Education Around The Globe: A Need for Greater Understanding, Globalization & Internationalization

Karen Westervelt PT, MS, FAAOMPT, OCS, PGDipHSc, ATC, CMP[1], Shannon Smith BS[1], Jillian Tanych BS, EP-C[1], Wayne Hing PhD, MSc(Hons), ADP(OMT),DipMT, Dip Phys, FNZCP[2], Jeremy Sibold ATC. EdD[1], Linda Crane PhD[3]

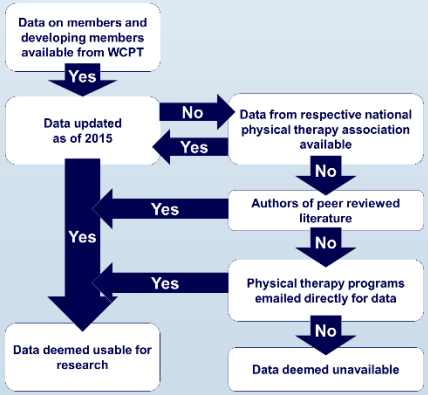
[1]University of Vermont Lecturer in Rehabilitation and Movement Science, College of Nursing and Health Science, Burlington, Vermont; [2]Bond University Professor and Head of Physiotherapy, Gold Coast, Australia; [3]Bond University Associate Dean of Teaching and Learning

Background & Objective

A window into physical therapist education around the globe can offer insight to the profession. However, at this time the window is not clear. There is a call from the World Confederation of Physical Therapy (WCPT) to unite and advance the profession through globalization.[1] Understanding physical therapist education globally and collaborating with international partners on educational issues is essential in order to progress the profession in education, research, and clinical practice.[2] In order to meet this mission, information needs to be centralized and easily accessible. The WCPT is one source of information[1] however the data is no current and has not previously been peer-reviewed.[2] Therefore, the main objective of this study was to investigate the variation in current physical therapist education programs globally.

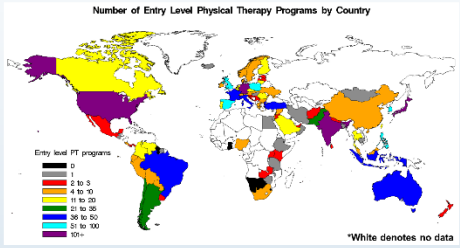
Methods

Data were collected from peer reviewed literature, electronic media, and individual academic programs. Descriptive statistics and maps were generated to compare physical therapist education programs. Data collection focused on total number of programs per country and duration of individual programs.

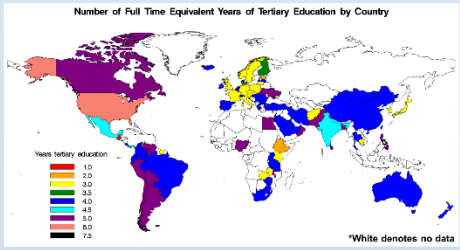


Results

This study demonstrated a high amount of variation in the number of programs per country and per region of the world. The Asia Western Pacific region had the greatest number of programs (776) followed closely by the European region (757). The African region has the least number of programs (31).

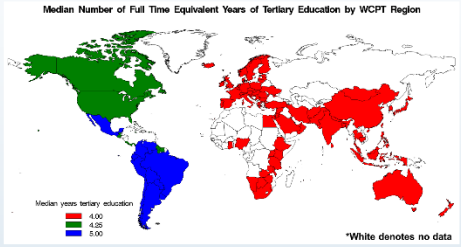


There was variation in duration of education when each country was examined individually. Duration ranged from 1.0 to 7.5 full time equivalent years of tertiary education.



The authors would like to thank Alan Howard, MS, the Director of the UVM Statistical Consulting Clinic, for his tireless assistance with the mapping of the data.

When duration in physical therapist education was examined by region of the world, the variation leveled. 64.2% of individual countries met the WCPT recommendation of 4+ years of physical therapist education. Analysis of the median by region found entry-level physical therapist education to meet the WCPT recommendation.



Implications

This centralization of information supports opportunities for dialogue to occur to guide globalization of physical therapist education and strive towards the next step of standardizing entry-level programs. Through this information sharing and international collaboration, the physical therapy profession can reduce the variation in physical therapist education while facilitating advances in the profession.

Limitations & Future Research

Potential limitations of this project include lack of accessible, current data. Additional research is needed on the global standardization of entry-level physical therapist education programs.

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Appendix 2 Bond Ethics Approval for Survey Project

BOND UNIVERSITY
BRINGING AMBITION TO LIFE

HUMAN RESEARCH ETHICS COMMITTEE
Bond University
Gold Coast, Queensland 4229
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(from overseas)
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11 August 2015

Wayne Hing, Karen Westervelt, Linda Crane and Jeremy Sibold
Health Sciences and Medicine
Bond University

Dear Wayne

Application ID: **15277**
Project Title: **Trends in Post Graduate Physical Therapy Education in Two Different Regions of the World**

I am pleased to confirm that your project was reviewed by Bond University Human Research Ethics Committee and you have been granted approval to proceed.

The Committee requires, as a condition of approval, that all investigations be carried out in accordance with the National Health and Medical Research Council's (NHMRC) *National Statement on Ethical Conduct in Human Research* (2007). Approval is subject to conduct of the research in accordance with the requirements set out in the National Statement.

Approval is given subject to the protocol of the study being undertaken as described in your application, and approved amendments. As you may be aware the Ethics Committee is required to annually report on the progress of research it has approved. We would greatly appreciate if you could respond promptly and fully to the request for information on this project which will be distributed in March/April each year.

Under the terms of the National statement BUHREC has a role to monitor approved research projects and if necessary may withdraw approval. Conduct of unapproved research or deviation from the approved protocol may constitute academic misconduct and will be investigated in accordance with Section B of the *Australian Code for the Responsible Conduct of Research* (2007). Please refer to the Research Ethics website for more detail on Research Integrity and Bond University processes for dealing with instances of research misconduct.

You are reminded that the Principal Investigator must immediately report anything that might warrant review of ethical approval of the project. Should you have any queries or experience any problems, please contact us promptly.

We wish you well with your research project.

Yours sincerely

Dr Mark Bahr
Chair Bond University Human Research Ethics Committee

www.bond.edu.au

Appendix 3 University of Vermont Ethics Approval for Survey Project

The UNIVERSITY of VERMONT
Committees on Human Subjects
Serving the University of Vermont
and the UVM Medical Center

RESEARCH PROTECTIONS OFFICE
213 Waterman Building
85 South Prospect Street
Burlington, Vermont 05405
(802)656-5040 ph
www.uvm.edu/irb/

Protocol Exemption Certification

TO:	Karen Westervelt
FROM:	Gale Weld, Research Review Administrator
DATE OF CERTIFICATION:	01-May-2015
SUBJECT:	CHRBSS: 15-516 Trends in Post Graduate Physical Therapy Education in Two Different Regions of the World

Following IRB review of your project, it has been determined that it qualifies for exemption, as indicated below.

Exemption Category: 2
Federal Exemption: "Research involving the use of educational tests (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures, or observation of public behavior, unless: (a) information obtained is recorded in such a manner that human subjects can be identified, directly or through identifiers linked to the subjects; and (b) any disclosure of the human subjects' responses outside the research could reasonably place the subjects at risk of criminal or civil liability or be damaging to the subjects' financial standing, employability, or reputation."

This exemption is effective for the duration of the project UNLESS modifications are made that affect the original determination of exemption.

cc: Jeremy Sibold

Appendix 4 University of Vermont Ethics Amendment for Survey Project

The UNIVERSITY of VERMONT
Committees on Human Subjects
Serving the University of Vermont
and the UVM Medical Center

RESEARCH PROTECTIONS OFFICE
213 Waterman Building
85 South Prospect Street
Burlington, Vermont 05405
(802)656-5040 ph
www.uvm.edu/irb/

Protocol Exemption Certification

TO:	Karen Westervelt
FROM:	Gale Weld, Research Review Administrator
DATE OF REVIEW:	12-Oct-2015
DATE OF AMENDMENT:	07-Oct-2015
SUBJECT:	CHRBSS: 15-516
	Trends in Post Graduate Physical Therapy Education in Two Different Regions of the World

Thank you for submitting the proposed modification to this exempt project. Following IRB review, it has been determined that the project still qualifies for exemption as indicated below.

Exemption Category: 2
Federal Exemption: "Research involving the use of educational tests (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures, or observation of public behavior, unless: (a) information obtained is recorded in such a manner that human subjects can be identified, directly or through identifiers linked to the subjects; and (b) any disclosure of the human subjects' responses outside the research could reasonably place the subjects at risk of criminal or civil liability or be damaging to the subjects' financial standing, employability, or reputation."

This exemption is effective for the duration of the project UNLESS modifications are made that affect the original determination of exemption.

cc: Jeremy Sibold

Appendix 5 Bond Information Sheet for Survey Project

BOND UNIVERSITY
BRINGING AMBITION TO LIFE

FACULTY OF HEALTH SCIENCES AND MEDICINE
Bond University
Gold Coast, Queensland 4229
Australia

Toll free 1800 753 855
(within Australia)

Ph: +61 7 5595 4400
Fax: +61 7 5595 4122
(from overseas)

Email: hsm@bond.edu.au

ABN 88 010 694121
CRICOS CODE 00017B

June 1, 2015

Research Information Sheet Explanatory Statement

Title of Study: **Trends in Post Graduate Physical Therapy Education in Two Different Regions of the World (BUHREC Protocol # 15277) (UVM CHRBSS #15-516)**

Principal Investigator (PI):Karen C. Westervelt MS, PT, OCS, FAAOMPT, ATC, PGDHSc, CMP

Key Personnel: Dr. Wayne Hing (Bond University), Dr. Jeremy Sibold (UVM), Dr. Linda Crane (Bond University)

Funders: Department of Rehabilitation and Movement Science, University of Vermont and Faculty of Health Science and Medicine, Bond University

This form is for participants from Australia.

Introduction
You are being invited to take part in this research study because you are a graduate of the Bond University Physiotherapy Program and your input regarding post graduate physiotherapy educational programming is important to us. You could also be invited to take part in this research study because you are knowledgeable in the area of post graduate PT education. This study is being conducted by Karen C Westervelt, HDR student at Bond University and faculty member at the University of Vermont, USA.

Purpose
Post-graduate physiotherapy education is becoming an important part of physiotherapy education. Higher entry level qualifications, ie the DPhty, and greater autonomy (ie direct access), are driving the need for more formal education. However, rapid development of new post graduate educational options vary including post graduate diplomas, clinical specializations, residencies and fellowships making it difficult for even the most motivated clinician to know how to advance in the profession. Therefore, the purpose of this research project to analyze the interest and needs for post Graduate Physiotherapy education in this region of the world.

Study Procedures
For Bond alumni, if you take part in the study, you will be asked to complete a survey regarding post graduate Physiotherapy education. The survey will take approximately 10 minutes to complete. We anticipate the analysis to be completed during the 2015-2016 academic year.
For non Bond University alumni participants, you will be invited to participate in an interview either in person, over the phone or over Skype. If you choose to participate you will be asked questions regarding post graduate Physiotherapy education. The interview will be audio recorded. The interview will take approximately 20 minutes to complete. We anticipate the analysis to be completed during the 2015-2016 academic year.

Benefits
As a participant in this research study, there is no direct benefit for you; however, information from this study may benefit you and other people in the future. You will have the opportunity to contribute your thoughts and opinions about post graduate physiotherapy education. You will help shape future physiotherapy programming at Bond. In addition, you will also be helping to advance the literature in this area of physiotherapy to help our profession grow.

Risks
We will do our best to protect the information we collect from you during this study. We will not collect any information that will identify you to further protect your confidentiality and avoid any potential risk for an accidental breach of confidentiality.

Costs
There will be no costs to you for participation in this research study.

Compensation
You will not be paid for taking part in this study.

Confidentiality
Your data will be identified in the research records by a code name or number. There will be no list that links your identity with this code. All surveys and interview data in electronic version will be kept on a password protected computer in a locked office within a locked suite. Your name will not appear in any publication as only the group will be identified. Any quotes used as a part of any publication or presentation will be devoid of any identifying characteristics. All surveys data will be stored in a secured drive on the Bond University system by the PI in accordance with the guidelines set out by the Bond University Human Research Ethics Committee. Only the research team members will have access to the data. Representatives of the UVM Institutional Review Board, Bond University Human Research Ethics Committee and regulatory authorities will be granted direct access to your research records for verification of procedures and/or data. Data will be kept for 6 years.

Voluntary Participation/Withdrawal
Taking part in this study is voluntary. You are free to not answer any questions or withdraw at any time. You may choose not to take part in this study, or if you decide to take part, you can change your mind later and withdraw from the study.

Questions

If you have any questions about this study now or in the future, you may contact me Karen Westervelt at kwestervelt@bond.edu.au. If you have questions or concerns about your rights as a research participant, then you may contact:

Bond University Human Research Ethics Committee,
Bond University Office of Research Services.
Bond University, Gold Coast, 4229, Australia
Tel: +61 7 5595 4194 Fax: +61 7 5595 1120 email: ethics@bond.edu.au

Participation

Your participation is voluntary, and you may refuse to participate without penalty or discrimination at any time.

Please print this information sheet for your records before continuing.

Thank you for taking time to assist us with this research.

Karen C. Westervelt

Karen Westervelt MS, PT, FAAOMPT, OCS, PGDipHSc, ATC, CMP,
Primary Investigator
Bond Institute of Health & Sport
2 Prometheon Way
Robina 4229, Gold Coast, Queensland
Australia
E-Mail: kwestervelt@bond.edu.au

PhD Research Supervisors

Professor Wayne Hing Head of Physiotherapy Program, Bond University

Dr. Linda Crane, Associate Dean, Learning & Teaching Faculty of Health Science Medicine, Bond University

Dr. Jeremy Sibold ATC, EdD , Associate Professor and Director of the Exercise and Movement Science Program, Chair of Rehabilitation and Movement Science, Core Faculty-DPT, The University of Vermont

Appendix 6 University of Vermont Information Sheet for Survey Project

Research Information Sheet

Title of Study: **Trends in Post Graduate Physical Therapy Education in Two Different Regions of the World**

Principal Investigator (PI): Karen C Westervelt MS, PT, OCS, FAAOMPT, ATC, PGDHSc, CMP

Faculty Sponsor: Dr. Jeremy Sibold

Funder: Department of Rehabilitation and Movement Science, University of Vermont

Introduction
You are being invited to take part in this research study because you completed the UVM PT Alumni Survey and provided your name and email address under the question regarding interest in learning more about the post graduate PT education research. This study is being conducted by Karen C Westervelt at the University of Vermont.

Purpose
Post-graduate physiotherapy education is becoming an important part of physiotherapy education. Higher entry level qualifications, ie the DPT, and greater autonomy (ie direct access), are driving the need for more formal education. However, rapid development of new post graduate educational options vary including post graduate diplomas, clinical specializations, residencies and fellowships making it difficult for even the most motivated clinician to know how to advance in the profession. Therefore the purpose of this research project is to further analyze the interest and needs for post Graduate Physiotherapy education in this region of the world.

Study Procedures
If you take part in the study, you will be asked to participate in a focus group discussion on October 29th, 2015 at 7:00-7:30 pm in Rowell 310L. Discussion topics will focus on barriers to continued professional education and provide an opportunity to expand upon issues presented in the survey. During the discussion you can choose which questions you wish to answer. The focus group discussion will be audio recorded to allow the researchers to later transcribe the discussion for analysis purposes. We anticipate the analysis to be completed during the 2015-2016 academic year.

Benefits
As a participant in this research study, there is no direct benefit for you; however, information from this study may benefit other people now or in the future. You will have the opportunity to contribute your thoughts and opinions about post graduate PT education. In addition, you will also be helping to advance the literature in this area of physical therapy to help our profession grow.

Risks
We will do our best to protect the information we collect from you during this study. We will not collect any information that will identify you to further protect your confidentiality and avoid any potential risk for an accidental breach of confidentiality.

Version Date of Information Sheet: 10.12.15

Costs
There will be no costs to you for participation in this research study.

Compensation
You will not be paid for taking part in this study.

Confidentiality
In the focus groups, questions are directed to the group, not to individuals. You have the right to not answer a question or withdraw from the study at any time in the process. We will ask that everyone in the group not repeat what they have heard others say, but there is always the chance that someone will repeat what you have said. Everything you say will be kept confidential by the researchers.

Voluntary Participation/Withdrawal
Taking part in this study is voluntary. You are free to not answer any questions or withdraw at any time. You may choose not to take part in this study, or if you decide to take part, you can change your mind later and withdraw from the study.

Questions
If you have any questions about this study now or in the future, you may contact me Karen Westervelt at the following phone number (802) 656-3268 or Karen.Westervelt@med.uvm.edu. If you have questions or concerns about your rights as a research participant, then you may contact the Director of the Research Protections Office at (802) 656-5040.

Participation
Your participation is voluntary, and you may refuse to participate without penalty or discrimination at any time.

Thank you!

Karen Westervelt

Name of Principal Investigator: Karen Westervelt
Address: 310P Rowell
Telephone Number: 802-656-3268
E-Mail: karen.westervelt@med.uvm.edu

Committee on Human Research
Date Approved 10-12-2015
CHRBSS# 15-511a

Appendix 7 Postprofessional PT Education Survey Poster

Post-Professional Physical Therapy Education: A Survey from Two Different Regions of the World

Karen C. Westervelt PT, MS, FAAOMPT, OCS, PGDipHSc, ATC, CMP[1], Jennifer Chenette BS, SPT[1], Liana Merkel BS, SPT[1], Wayne Hing PhD, FNZCP[2], Jeremy Sibold ATC, EdD[1], Linda Crane PhD[3]

[1]Rehabilitation and Movement Science, University of Vermont; Burlington, Vermont; [2]Health Sciences and Medicine, Bond University; Gold Coast, Australia; [3]Teaching and Learning; Bond University; Gold Coast, Australia

Introduction

There is a paucity of information regarding post-professional physical therapy educational needs for busy professionals. Post-professional physical therapy education is critical to the advancement of the profession, as it transforms general practitioners into specialists who often lead advances in education[1], research[1], and clinical outcomes.[1,2,3] Therefore, the aim of this research is to provide information to assist institutions around the world in designing appropriate post-professional education programs for physical therapists.

Methods

Survey data were collected from graduates of two equivalent Doctor of Physical Therapy programs in the United States (USA) and Australia (AUS) and from a focus group in the USA. Data was analyzed using descriptive statistics and phenomenological analysis.

Table 1: Demographics for both cohorts of subjects.

Variable	Response	USA Respondents (n=116) n (%)	AUS Respondents (n=84) n(%)
Currently have a clinical specialization	Yes	11 (10.3)	9 (10.7)
	No	96 (89.7)	71 (84.5)
	Didn't Respond	NA	4 (4.8)
Current area of practice	Orthopedics	87 (75.0)	NA
	Musculoskeletal	NA	61 (72.6)
	Sports	27 (23.3)	31 (36.9)
	Geriatrics/ Gerontology	24 (20.7)	11 (13.1)
	Neurology	16 (13.8)	11 (13.1)
	Pediatrics	10 (8.6)	18 (21.4)
	Cardiovascular & Pulmonary	8 (6.9)	7 (8.3)
	Clinical electrophysiology	3 (2.6)	NA
	Women's Health/ Continence	6 (5.2)	5 (6.0)
	Generalist	NA	13 (15.5)
	Occupational Health	NA	4 (4.8)
	Other	8 (6.9)	2 (2.4)
	Didn't Respond	0 (0.0)	1 (1.2)
Continuing education wanted in current area of practice	Yes	88 (69.8)	56 (66.7)
	No	18 (14.3)	12 (14.3)
	Didn't respond	10 (8.6)	16 (19.0)

Results

- 10.3% of USA participants completed a national clinical specialization, and 10.7% of AUS participants completed a post-professional qualification.
- Participants who graduated more recently expressed a greater interest in pursuing post-professional specialization within the next 5 years (USA 57.5% and AUS 44.5%).
- Participants expressed the greatest interest in post-professional education in orthopedic (USA 45.7%) and musculoskeletal (AUS 35.7%) physical therapy.
- Participants expressed a strong interest in returning to their alma maters in order to pursue post-professional education (USA 89.7% and AUS 71%).

Figure 1: Years experience vs Specialization in next 5 years

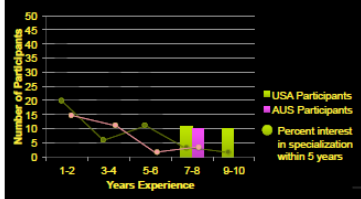
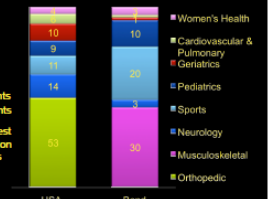
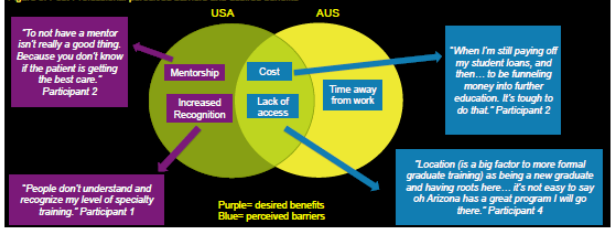


Figure 2: Areas wanted for continuing education



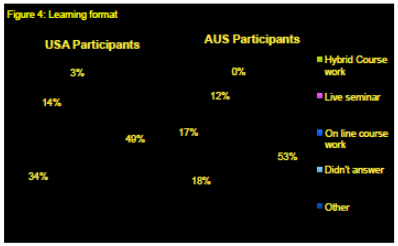
- The greatest perceived barriers identified by both groups to post-professional education were cost and lack of access. The AUS group also identified time away from work. The greatest desired benefits of post-professional education identified by the USA focus group were access to a mentor and increased professional recognition.

Figure 3: Post-Professional perceived barriers and desired benefits



- Participants expressed the most interest in hybrid learning format (USA 48.6% and AUS 53.6%).
- Participants from both regions expressed interest in international collaborations in physical therapy education (USA 62.1% and AUS 48.8%).

Figure 4: Learning format



Implications

Universal interest in and barriers to post-professional physical therapy education exist across the globe. The findings of this study suggest that institutions looking to establish post-professional education consider cost, access, time, and area of study. Offering hybrid education, including international collaborations, and mentoring targeted at recent graduates, may best meet the needs of busy physical therapists. Finally, in order to continue to drive the advancement of the profession, physical therapists must receive adequate benefits for the pursuit of post-professional education.

Limitations & Future Research

- Completion of the survey was optional, creating a self-selected group. Therefore, the sample cohort was not truly randomized and we cannot infer that the responses represent all physical therapists.
- Further research in the effectiveness of different mentoring models and how to offer increased recognition for post-professional education is needed.

Appendix 8 University of Vermont Ethics Approval for International Collaboration Study

The UNIVERSITY of VERMONT
Committees on Human Subjects
Serving the University of Vermont
and Fletcher Allen Health Care

RESEARCH PROTECTIONS OFFICE
213 Waterman Building
85 South Prospect Street
Burlington, Vermont 05405
(802)656-5040 ph
www.uvm.edu/irb/

Protocol Exemption Certification

TO:	Karen Westervelt
FROM:	Donna Silver, Assistant Director
DATE OF CERTIFICATION:	02-May-2014
SUBJECT:	CHRBSS: 14-519 International Collaboration in Manual Physical Therapy: An Opening of Ideas and Opportunities

According to federal regulations, certain types of research activities are "exempt" from formal Committee review and approval, however, University policy requires that all projects which involve human subjects be submitted to the Committee office for exemption determination.

Following such a review of your project, it has been determined that it qualifies for exemption, as indicated below, under Section 45 CFR 46.101(b) of the Federal Policy for the Protection of Human Subjects.

Exemption Category: 2
"Research involving the use of educational tests (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures, or observation of public behavior, unless: (a) information obtained is recorded in such a manner that human subjects can be identified, directly or through identifiers linked to the subjects; and (b) any disclosure of the human subjects' responses outside the research could reasonably place the subjects at risk of criminal or civil liability or be damaging to the subjects' financial standing, employability, or reputation."

It is University policy to require all research to be conducted in accordance with the Belmont Report, which sets forth ethical principles for research involving humans as subjects. A copy of this report is available on our website under Rules, Regulations, and Guidance.

Modifications may affect the original determination of exemption, therefore, you must submit any proposed project modifications which affect human subjects for review prior to implementation (i.e. surveys, questionnaires, changes to on-line interventions, etc.).

This exemption is effective for the duration of the project UNLESS modifications are made that affect the original determination of exemption.

Appendix 9 Information Sheet for International Collaboration Study

Research Information Sheet

Title of Research Project:

International Manual Physical Therapy Collaboration: The Opening of Ideas and Opportunities

Principal Investigator:
Karen C. Westervelt MS, PT, OCS, ATC, PGDHSc, CMP and Research Team Member Kristina Kelly SPT, EdM, NASM-CPT, NASM-PES; Department of Rehabilitation and Movement Science, University of Vermont.

Introduction and Purpose:

You are being invited to take part in a research study we are conducting through the University of Vermont Department of Rehabilitation and Movement Science due to your involvement with the International Manual Therapy Collaboration in either Australia or New Zealand.

Physical therapists have the opportunity to work with people from many cultures. In fact, cultural competency is one of the elements in our physical therapy standards of practice. We will be investigating perception of cultural competency as you journal about your immersion experience in Australia or New Zealand, if you are a participating UVM student. In addition, we live in an environment where collaboration from partners around the world has become possible. We believe that there are many benefits from forming international collaborative partners, and therefore, we will be collecting data regarding perceptions of collaboration as well as opportunities that arise from traveling to physical therapy schools in Australia and New Zealand.

The results from this study may help in determining future course content, identifying other types of experiences that contribute to cultural competency of physical therapy students, and describing professional opportunities for students and faculty of physical therapy programs who participate in an international collaboration.

Study Procedures:

If you take part in the study and if you are a UVM student, you would be asked to allow the reflective journal entries and course application essay that are required as a part of PT 352 to be qualitatively analyzed by the investigators after all grades for PT 352 have been submitted. All journals entries will be entered in Word format onto your Blackboard PT 352 site and prior to download from Blackboard for analysis, all identifying characteristics will be removed so they cannot be linked to any individual; identifying characteristics will also be removed from application essays prior to analysis.

For non-UVM students and faculty members involved in the International Manual Therapy Collaboration, there is a short questionnaire you would be asked to complete, which would be aimed at gathering information about your experience with the International Manual Therapy Collaboration. This questionnaire will take approximately 10-15 minutes to complete. We anticipate the analysis to be completed during the 2014-2015 and 2015-2016 academic years.

Benefits:

As a participant in this research study there is no direct benefit for you. However, you will have the opportunity to contribute your thoughts and opinions about your experience with the International Manual Therapy Collaboration. In addition to the personal insight gained from engaging in reflective journaling and questionnaire completion, you will also be helping to advance the literature in this area of physical therapy so that the profession can consider additional effective teaching methods and immersion models for preparing PT students for practice.

Risks:

The risk of participation in this study is the potential for a breach of confidentiality. We will do our best to protect the data we collect from you during the journaling or questionnaire by not collecting any information that will identify you to avoid any potential risk for an accidental breach of confidentiality.

Costs:

There will be no costs to you for participation in this research study other than your time.

Compensation:

You will not be paid for taking part in this study.

Confidentiality:

All information collected from you during the course of this study will be kept without any identifiers. Your data will be identified in the research records by a code name or number. There will be no list that links your identity with this code. All journal/essay material and electronic copies of questionnaires will be kept on a password protected computer in a locked office within a locked suite. Your name will not appear in any publication as only the group will be identified. Any quotes used as a part of any publication or presentation will be devoid of any identifying characteristics. All questionnaires in paper form (if any) will be stored in a locked cabinet in a locked office at the Department of Rehabilitation and Movement Science at UVM by the PI. Only the research team members will have access to the data. Representatives of the Institutional Review Board and regulatory authorities will be granted direct access to your research records for verification of procedures and/or data.

Voluntary Participation/Withdrawal:

Taking part in this study is voluntary. You are free to not answer any questions or to withdraw at any time. You may choose not to take part in this study, or if you decide to take part, you can change your mind later and withdraw from the study.

Questions:

If you have any questions about this study now or in the future, you may contact Karen C. Westervelt MS, PT, OCS, ATC, PGDHSc, CMP at

karen.westervelt@uvm.edu or (802) 656-3252 or you may contact research team member Kris Kelly at kkelly11@uvm.edu. If you have any questions about your rights as a participant in a research project, please contact Nancy Stalnaker, Director of the Research Protections Office at the University of Vermont at (802) 656-5040.

Statement of Consent:

You have been given a summary of this research study. If you are a UVM student choosing to participate, your verbal consent will be documented in the research record. If you are a non-UVM student or faculty member participating in the International Manual Therapy Collaboration, by completing the questionnaire, you are consenting to participate in this study.

Thank you!

Karen Westervelt and Kristina Kelly

Name of Principal Investigator: Karen Westervelt

Address: 310 E Rowell

Telephone Number: 802-656-3252

E-Mail: karen.westervelt@uvm.edu

Name of Research Team Member: Kristina Kelly

E-Mail: kkelly11@uvm.edu

Appendix 10 Journalizing Prompts for Participants From University of Vermont

1. Thinking over our preparations (readings, meetings, visa, ticket, forms, etc) for this trip to Australia, what are some of your expectations for (a) yourself; (b) your fellow classmates; (c) faculty? Do you feel ready: why or why not?
2. What are your first impressions here in Australia? What surprised you?
3. Based on your interactions with Australian physical therapist students, do you feel you have a better understanding of Australian physical therapist education levels?
4. Have your perceptions of Australian physical therapists changed due to your participation in this international manual therapy collaboration?
5. If you answered "yes" in the question above, have your perceptions changed for the better or for the worse?
6. Please explain how your perceptions have changed.
7. What were your expectations of the Australian students before we arrived? In what ways did they differ or meet your expectations?
8. Did you discover what the Australians are proud of and what their accomplishments and strengths are?
9. What have you noticed that Australians value in life, their studies, their relationships, their careers, etc?
10. What surprised you the most about your time abroad?
11. What did you appreciate the most from your abroad experience?
12. Have you started considering traveling, working, or studying outside of your home country based on your participation in this international manual therapy collaboration?
13. What obstacles prevent you from studying or working abroad?
14. What have you learned from participating in this international manual therapy collaboration? What can you apply on your return home?
15. What was your favorite experience when you were abroad?
16. Which experience had the most impact on you personally?
17. Do you have other comments on your participation with the University of Vermont international manual therapy collaboration?

Appendix 11 Open-Ended Survey Questions for Students From Bond University

1. The visit of the Doctor of Physical Therapy students from the University of Vermont no doubt disrupted your normal schedule. Do you feel the benefits of the visit outweighed the disruption in your normal schedule?
2. Based on your interactions with the physical therapist students from the University of Vermont, do you feel you have a better understanding of American physical therapist education levels?
3. Have your perceptions of American physical therapists changed due to your participation in this international manual therapy collaboration?
4. If you answered “yes” in the above question, have your perceptions changed for the better or the worse?
5. Please explain how your perceptions of American physical therapists have changed.
6. What were your expectations of the American physical therapist students before they arrived?
7. In what ways did they differ or meet your expectations?
8. Have you started to consider traveling, working, or studying outside of your home country based on your participation in this international manual therapy collaboration?
9. What obstacles prevent you from studying or working abroad?
10. Do you have other comments on your participation with the University of Vermont international manual therapy collaboration?

Appendix 12 Open-Ended Survey Questions for Faculty From Bond University

1. The visit of the Doctor of Physical Therapy students from the University of Vermont no doubt disrupted your normal schedule. Do you feel the benefits of the visit outweighed the disruption in your normal schedule?
2. How much time did you spend preparing for the visit of the students from the University of Vermont?
3. What took the most amount of your time and effort?
4. Based on your interactions with the physical therapist students from the University of Vermont, do you feel you have a better understanding of American physical therapist education levels?
5. Have your perceptions of American physical therapists changed due to your participation in this international manual therapy collaboration?
6. If you answered "yes" in the above question, have your perceptions changed for the better or the worse?
7. Please explain how your perceptions of American physical therapists have changed.
8. Have you started to consider traveling, working, or studying outside of your home country based on your participation in this international manual therapy collaboration?
9. Which of the following opportunities would be most appealing to you? Short-term visit to a university outside Australia, half-year sabbatical abroad, year sabbatical abroad, international research collaboration, organizing a student trip abroad, teaching a continuing education course abroad, attending a continuing education course abroad, none, and other.
10. What obstacles prevent you from engaging in an international experience?

Appendix 13 Journal of Physical Therapy Education Article

METHOD / MODEL PRESENTATION

International Collaboration in Manual Physical Therapy: An Educational Model

Karen C. Westervelt, PT, MS, ATC, Celia Ellis, PT, DPT, Leighann Ellis, PT, DPT, Amanda Quanstrom, PT, DPT, Kimberly D. Wallingford, PT, DPT, Hendrika Maltby, PhD, RN, and Wayne Hing, DipPhys, PhD, MSc

Background and Purpose. Internationalization allows the world of higher education to become more connected. International partnerships between physical therapist education programs open new opportunities for learning and cultural exchange. Relatively few international collaborative immersion experiences have been described in the physical therapy literature. The purpose of this article is to describe a model of international educational collaboration between physical therapist education programs at 2 universities in different countries. This collaboration was unique because it provided qualitative analyses of data collected from hosts and guests during the experience.

Method/Model Description and Evaluation. Eleven physical therapist students, 1 postgraduate student, and 2 faculty members from the University of Vermont (UVM) traveled to Bond University, Gold Coast, Queensland, Australia. While at Bond University, guest participants collaborated with 36 students in the final year of the Doctor of Physiotherapy program and 11 faculty members in a 2-week international manual therapy collaboration. During this experience, students participated in manual therapy course work, seminars, and cultural activities. Journal data were collected from the students from UVM. Students and faculty members from Bond University were surveyed with quantitative and open-ended qualitative questions that were matched with the journal prompts used for the students from UVM. Interpretative phenomenological analysis methodology was used to determine the meaning of this collaborative experience.

Outcomes. The following 3 themes emerged from the student data: learning—the acquisition of new skills both professionally and personally; collaboration—the development of new relationships and opportunities with faculty members and students; and experiencing the "other"—observations made from immersion while abroad.

Discussion and Conclusion. Themes identified were similar to those established within the literature. Participants gained life experiences from traveling and insight into their personal and professional goals. The international manual therapy collaboration between UVM and Bond University successfully initiated a new dialogue. The findings support the potential for future collaborative immersion opportunities between education programs to prepare emerging professionals to work in an increasingly global environment.

Key Words. Education study abroad, Internationalization, Manual therapy, Physical therapist education.

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BACKGROUND AND PURPOSE

International partnerships between physical therapist education programs open new opportunities for learning and cultural exchange. Collaborative international learning opportunities are a recommended curriculum strategy in physical therapist education because they prepare students to practice in an increasingly interdependent world by engaging them in collaborative participant learning and cultural immersion and by facilitating collaborative research.[1] Additionally, collaborative learning opportunities expose students to various models of learning. According to the Commission on Accreditation in Physical Therapy Education, if students "become aware of multiple styles of thinking, diverse social concepts, values, and ethical behaviors," such awareness will "prepare them for identifying, redefining, and fulfilling their responsibilities to society and the profession."[2(p5)]

International partnerships between universities involve both parties participating in an exchange of teaching and learning.[3] In physical therapist education, these partnerships can play important roles in meeting the professional curriculum expectations for cultural competency,[1] training physical therapists who are globally minded, and preparing the next generation for practice in an increasingly global health care arena. When 2 or more universities participate in faculty or student exchanges, it is important to understand the impact of the experience on both the visitors and the hosts. Few international collaborations have been described in the

physical therapy literature.[4] In contrast, international learning opportunities appear to be more readily available in medical and nursing education programs.[4]

Ample literature exists to support the value of international immersion experiences in nursing education.[5–11] Although most available research describes the nursing student perspective, there is evidence to support the notion that such immersion experiences would benefit all health care professionals, including physical therapists.[12–17] Students who have traveled and been immersed internationally have benefited in several ways. For example, they often report the experience of travel as transformative to their personal beliefs and worldviews. Students who have been immersed internationally, even for a short period of time, report feeling greater confidence in their clinical skills.[5,6,8,12,14,15,18,19] This result may be due to the "profound impact that 'leaving the comfort of the familiar' can have on students in terms of personal growth and gaining professional competence."[10(p56)] In addition, students report feeling prepared to engage in future learning opportunities and cultural experiences as clinicians.[10] One study found that students had an increased "respect for and understanding of other cultures."[8(p74)] These students also cited a desire to participate in a style of learning that was more "vivid and real"[8(p74)] as a reason for continuing to travel.

Maltby and Abrams[9] led a study that evaluated the meaning of a 3-week immersion experience in Bangladesh for undergraduate nursing students. While abroad, students participated in interviews of patients and toured various clinical settings. Analysis of the students' journals identified 4 themes: "beginning to see, thinking about the seen, wanting to change the seen, and transformed by the seen."[9(p6)] Researchers concluded that immersion experiences help students cope with confronting cultural differences by teaching them to better understand both themselves and their patients. This model of teaching promotes a holistic approach to interactions with patients by fostering unbiased understanding between the health care provider and the patient.

Research that appraises the effects of a short-term international immersion experience on physical therapist students in the United States is scarce. A thorough search of the literature revealed a study that examined the meaning of such an experience from the perspective of a physical therapist student.[15] The researchers assessed the qualitative value of a short-term, 8-day, immersion experience in the Republic of Surinam for a second-year physical therapist student from the United States. Reflective journalizing and emotional recall were used to record the experience, and an ethnographic approach was applied. Four themes were identified: "genuine warmth of hosts, similarities between American and Surinam physical therapist practice, ease of acknowledging, accepting and talking about diversity, and enhanced appreciation for the value of a US education."[15(p21)] Although that study did explore the student perspective, several characteristics of the study may have biased the results. The limited sample size of the study (n=1) made it difficult to ascertain which experiences were part of a phenomenon common among US physical therapist students and which experiences were unique to the student in the study, who also was a coauthor. In addition, data on the perspective of the host community were not collected.[15] The methodology was also a limiting factor. Researchers applied an ethnographic approach during qualitative analysis; such an approach focuses on describing a particular culture.[20] The limitation of this approach is that the "student's observations are not always true reflections of society."[15(p21)]

Nevertheless, that study made a significant contribution to the literature by being one of the first to attempt to understand the experiences of US physical therapist students during immersion abroad. The study demonstrated that a student who has traveled abroad is likely to reflect on his or her experiences afterward and find additional meaning and application of new knowledge. For example, the participant described a sense of having a broadened worldview and a higher level of cultural sensitivity after just 8 days of immersion.[15]

Another study in the physical therapy literature assessed an existing model of international service learning for physical therapist students.[17] Students participated in "academic study of Ecuador, pediatric physical therapy courses, and a 9-day international service learning trip involving 2 Ecuadorian orphanages."[17(p44)] Sixty-one physical therapist alumni who had participated in the international service-learning program over the preceding 5 years completed an online survey to assess the long-term impact of the service-learning experience. The 6 key global partners of the experience took part in one-on-one interviews.[17] Collected data showed that alumni who had participated in the service-learning trip demonstrated an increased desire to "develop cultural competence, and participate in pro bono physical therapy"[17(p44)] and that the global partners expressed high levels of satisfaction with the partnership overall.

As the physical therapy profession moves toward forging international collaborations, addressing the lack of literature assessing the impact of immersion experiences on visiting and host students and the community is imperative.[5,6,8–10,12–16,18,19] Grzelak and Glickman described the student viewpoint of being immersed abroad.[15] In doing so, the authors highlighted a distinct gap in the literature: an absence of studies addressing a host country's perspective during an international collaborative effort. The authors stated, "Gaining feedback from the host community (staff and students) about the exchange would better address ethical concerns for this type of research study."[15(p21)] Other authors have come to the same conclusion because the experience can put stress on receiving countries and require a great deal of a community's time and energy to prepare for the experience.[15,21–23] Although travel-abroad experiences have been promoted as 1 of the more effective teaching opportunities for engaging university students and promoting the exploration of cultures and life experiences different from their own,[24] additional research is needed to assess the influence of an international collaborative experience from the host's perspective as well as the traveler's perspective.

The purpose of this article is to describe a model of international educational collaboration between 2 universities with Doctor of Physical Therapy (DPT) programs. Available evidence to support the importance of this topic to the physical therapist education community is presented, and a description of the course design and a discussion of the efficacy of this model follow. The collaboration was unique because it provided qualitative analyses of data collected from all participants, including visiting students, host students, and faculty members. Analysis of this model offers a new paradigm for institutions wishing to establish academic international collaboration.

METHOD/MODEL DESCRIPTION AND EVALUATION

Educational Setting

The University of Vermont (UVM) is a public university in the northeastern United States. The DPT curriculum is a 3-year graduate-degree program. The "International Manual Therapy Collaborative" with Bond University, Gold Coast, Queensland, Australia, was an elective course offered to students in the final year of the UVM program and to clinical educators associated with UVM. Participation was voluntary, and selection was based on a written application. Participants were responsible for all expenses.

Bond University is a private university.

Table 1. Participant Demographics[a]

Characteristic	Students From University of Vermont (n=12)	Students From Bond University (n=26)	Host Faculty (n=11)
Age (y)			
18–23	7 (58.33)	7 (26.92)	0 (0)
24–29	3 (25)	15 (57.69)	0 (0)
30–39	2 (16.67)	2 (7.69)	6 (54.55)
40–49	0 (0)	1 (3.85)	2 (18.18)
50–59	0 (0)	0 (0)	2 (18.18)
60–69	0 (0)	0 (0)	1 (9.09)
Not answered	0 (0)	1 (3.85)	0 (0)
Sex			
Women	7 (58.33)	12 (46.15)	7 (63.64)
Men	5 (41.67)	13 (50)	4 (36.36)
Not answered	0 (0)	1 (3.85)	0 (0)
Country(s) of citizenship			
Australia	0 (0)	9 (34.62)	7 (63.64)
United States	11 (91.67)	7 (26.92)	0 (0)
Canada	0 (0)	7 (26.92)	0 (0)
New Zealand	0 (0)	0 (0)	4 (36.36)
Hong Kong	0 (0)	1 (3.85)	0 (0)
Japan	0 (0)	1 (3.85)	0 (0)
China	1 (8.33)	0 (0)	0 (0)
Not answered	0 (0)	1 (3.85)	0 (0)

[a]Data are reported as number (percentage) of participants.

The decision to partner with Bond University was proposed by faculty members at UVM who wanted to provide students at UVM with an advanced instruction course in manipulation and manual therapy skills. The faculty members had a professional relationship with the program director at Bond University that facilitated the establishment of the collaboration. Australia is widely considered to be a leader in the field of manual physical therapy, and Bond University has the first Australian Physiotherapy Council–accredited entry-level Doctor of Physiotherapy (DPhty) program in the country. The DPhty program is a 2-year, year-round graduate-degree program that attracts diverse students from around the world (Table 1). Additionally, the curricula at both UVM and Bond University were compared and deemed to be similar, making this endeavor possible.

Participants

Informed consent was obtained from all participants. Eleven physical therapist students, 1 postgraduate student, and 2 faculty members (1 of whom [KCW] is the primary investigator) from UVM traveled to Bond University. While at Bond University, guest participants from UVM collaborated with 36 students in the final year of the DPhty program and 11 faculty members, including 2 guest lecturers from New Zealand who taught classes to students from both UVM and Bond University.

Between June 28, 2014, and July 11, 2014, participants from UVM traveled to Bond University. While at Bond University, participants from UVM lived in campus housing. Participants attended lectures and learned techniques for advanced manual therapy skills, such as manipulation of the cervical, thoracic, and lumbar spine and the sacroiliac joint. Additionally, participants from UVM spent time learning about the Australian health care system and interacting with participants from Bond University. Multiple team-building activities and cultural opportunities were provided. Detailed descriptions of the procedures before and during the immersion experience are provided in Tables 2, 3, and 4.

OUTCOMES

All participants were surveyed for descriptive quantitative data (Table 1). Qualitative data were collected from participants from UVM in the form of journal responses. Participants were provided with prompts for journalizing 5 times throughout the 2-week immersion (Appendix 1); there was no requirement for free journal writing, so that the participants completed only the 5 prompted journal entries. Participants were asked to complete this task independently, and no minimum time requirement for writing was specified. All of the students from UVM participated.

All participating students and faculty members from Bond University were invited to participate in online surveys at the end of the collaboration to understand the impact of the visit on the hosts. The response rate of the students was 72.22%. The response rate of the faculty members was 84.62%. Both quantitative and open-ended qualitative survey questions (Appendixes 2 and 3) were administered via e-mail with the LimeSurvey tool.[25] Different program evaluation methods were used for the hosts and the visitors because the host faculty members expressed concern that the host students were participating in collaborative classes in addition to regularly scheduled classes and therefore would not have time for 5 independent journalizing sessions. Efforts were made to match the journal prompts with the open-ended survey questions whenever possible. The 2 methods did have several similarities, including the fact that the UVM journalizing prompts were structured and did not include free writing sessions. Although this feature of the journalizing prompts could have limited the depth of the journalizing responses, it meant that the journalizing prompts closely resembled

Table 2. Procedures for Participants From University of Vermont

Time Period	Description
Before travel	• Participants attended 3 seminars focusing on the foundational theories of manual physical therapy and information on travel and the culture of Australia. • To learn the foundational theories of manual therapy, the students selected a topic of interest. Each participant prepared a written paper and led a discussion on the topic. • Participants had attended lectures from the faculty at the University of Vermont on foundational theories of manual physical therapy and had practiced spinal mobilization techniques before departing for Australia. • To prepare for discussions on international health care access models, the participants selected a country and prepared an outline describing how the health care system is accessed in that country. • In the 2 seminars focusing on information about travel and the Australian culture, the participants learned about the location of the Gold Coast of Australia, time zone, climate, transportation, communication, the Aboriginal population, medical care, water purity, wildlife, safety/security, and country entry/exit requirements for visas and passports. They also learned about the Bond University Doctor of Physiotherapy (DPhty) program, campus, residence halls, cafeteria, and public transport system.
During immersion	• Participants lived in the Bond University student residence halls and had full access to the student facilities, including the teaching laboratories, cafeteria, and fitness center. • Participants attended 3 full days immersed with second-year participants from Bond University in advanced-level classes with guest instructors from New Zealand. • Participants attended skill practice sessions with students in the Bond University DPhty program and health care promotion presentations at which the students in the Bond University DPhty program presented community advocacy projects. • To learn about the Aboriginal culture, the participants attended a day program at the local Aboriginal culture center, a lecture and guided tour of the Aboriginal art display at Bond University, and a ceremony to celebrate Aboriginal students on campus (including an Aboriginal dancing demonstration).

Table 3. Procedures for Participants From Bond University

Time Period	Description
Before arrival of participants from University of Vermont	• Participants were briefed on the arrival and length of stay of the students in the Doctor of Physical Therapy program at the University of Vermont (UVM). • Participants were informed that there would be extra classes and laboratories with the participants from UVM on neurodynamics and manual therapy, with guest instructors from UVM and New Zealand. • Bond University class schedules were adjusted to create time for students to attend group classes while continuing their regular curriculum during the visit of students from UVM. • Students at Bond University had studied the foundational theories of manual physical therapy and practiced spinal mobilization techniques in laboratories before the arrival of students from UVM.
During immersion	• Participants attended 3 full days immersed with second-year participants from UVM in advanced-level classes with guest instructors from New Zealand. • Students at Bond University hosted community advocacy and fund-raising projects and invited the participants from UVM to join in the community-based activities. • Students at Bond University prepared and invited the students from UVM to a proper morning tea. • Students at Bond University invited the participants from UVM to nonacademic gatherings and informal discussions.

Table 4. Procedures for Faculty From Bond University

Time Period	Description
Before immersion	• Coordinated with faculty members from the University of Vermont (UVM) to compare curricula. • Coordinated class schedules and laboratory schedules to accommodate extra students. • Assisted with connections to university accommodations.
During immersion	• Led seminars for the participants from UVM on the Australian health care system, health care access in Australia, the role of physical therapists in Australia as primary health care providers, and the history of Australian physical therapist education. • Gave presentations on current research agendas. • Provided nonacademic immersion opportunities through formal and informal gatherings with students and faculty members at Bond University and their family and friends.

the open-ended survey questions provided to the participants from Bond University. The similarity of the journalizing prompts to the open-ended survey questions made comparing the comments about the immersion from the groups of participants possible.

Interpretive phenomenological analysis was used to examine how the participants interpreted their experiences while participating in the collaboration.[26] The research method was phenomenological because "it [made] enquires into consciousness, mental life, or how things seem[ed] to individuals."[27] The journals from the participants from UVM allowed the researchers to examine the students' personal discoveries, perceptions, and connections throughout the experience. The open-ended survey questions used for the participants from Bond University were designed to attempt to do the same within the confines of needing to limit the time commitment of the students from Bond University.

A dual interpretation process was used to evaluate the data. Dual interpretation is the attempt to understand what an experience is like from the participant's perspective. The interpretation is considered to be dual because "the participant must first try to make meaning of their world, then secondly the research tries to make sense of the participant's meaning."[26(p81)] Each personal journal or open-ended survey response was thoroughly analyzed for recurring ideas specific to each question, and the findings were compiled into overarching themes.

As is common in interpretive phenomenological analysis, 1 of the researchers was engaged throughout the experience as a participant to gain more insight from personal contact with the events, thus discovering what the series of events meant to the people experiencing them.[28] The small size of the participant pool allowed in-depth analysis of the experience and its meaning for each participant.[26,28] The participant pool itself was fairly homogeneous in that all participants were within the physical therapy profession. This satisfied one of the criteria for an interpretive phenomenological analysis and allowed for observation of themes in the data set.[26] Direct quotes from participants were used to help identify the significance and validity of the themes.[29]

Members of the research team analyzed the data from participants from UVM and Bond University by reading the responses and identifying common themes. Themes that appeared multiple times among the participants' responses were considered significant. Each researcher individually performed a preliminary synthesis of the themes. Final synthesis of the data was performed as a team by seeking 80% consensus of themes identified from journal entries and open-ended survey questions.

Three overarching themes in the data from the participating students were identified: learning—defined as the acquisition of new skills both professionally and personally (manual therapy skill acquisition for professional learning was prevalent); collaboration—defined as the development of new relationships and opportunities with faculty members and students; and experiencing the "other"—defined as the observations made from immersion in the classroom, residence

Table 5. Student Responses to Supporting Themes[a]

Theme	Response
1: Learning	"[This opportunity] has provided a depth and breadth of experience that would have been difficult to gain through on-campus learning only." (UVM 11)
	"It gave me the chance to work with other individuals who gave a different perspective on specific techniques and a chance to improve my HVT's." (Bond 26)
	"I feel as though I am light years ahead of where I was before I got on that plane to Australia." (UVM 10)
	"I was not comfortable handling necks during my first clinical and now I feel like my palpating skills have skyrocketed!" (UVM 2)
	"Australian physiotherapists have different ways of thinking about the same things we have been learning about for years and it is exciting to be able to bring that knowledge back to the states." (UVM 4)
2: Collaboration	"I have appreciated how open my classmates have been to forming new relationships and trying new things." (UVM 3)
	"... [My] favorite experience [was] that both the American and Australian PT students and faculty [were] working together to learn manual techniques from [a leader in manual therapy]." (UVM 6)
	"All the students were extremely friendly and integrated really well with our cohort. They were also very keen to share information on their experiences and knowledge, which was great." (Bond 17)
3: Experiencing the "other"	"From the surface it could be part of the US, but as I have talked to the people and looked a little deeper, the culture and people are different." (UVM 1)
	"... Everyone I spoke to, whether Australian, North American, African, or Asian, were welcoming and friendly and very interested to find out about our experiences as PT students in the US." (UVM 11)
	"Most of [the Australians] have been extremely welcoming and willing to include us in any/all activities." (UVM 3)
	"Great manual therapy classes! Was great to speak with people about their program in the USA and to see the similarities. I had wondered what the US programs were like compared to Bond." (Bond 15)
	"I am surprised by how laid back the entire country seems to be." (UVM 12)
	"Was good to be exposed to physiotherapists from around the world getting different perspectives on techniques and their experiences." (Bond 26)

Abbreviations: UVM, University of Vermont; Bond, Bond University; HVT's, high-velocity thrusts.
[a]Participants from whom quotes were obtained are indicated by numerals in parentheses after the quotes.

hall, and city. Often theme 3 involved the refinement of previous expectations (Table 5).

The credibility of the researchers' analysis was demonstrated by sharing the interpretation of the findings with the participants.[30] A letter summarizing the thematic analysis was sent via e-mail to all of the participating students from UVM and Bond University. All participants agreed with the themes identified by the researchers, supporting credibility. Auditability was demonstrated by listing the analysis steps performed by the researchers in a manner clear enough that others could follow the same step-by-step process. Fittingness was demonstrated by providing enough detail about the participants' experience that others could use the model to establish their own international collaboration.[30] Descriptive quantitative statistical data were analyzed to summarize the sample and were triangulated with qualitative data to provide a thorough analysis of the experience, so that this research could be used as a model for future programs.

Analysis of relevant responses of participants from UVM and Bond University revealed that, as a result of the collaboration experience, 33% of the participants from UVM and 34% of the participants from Bond University reported that they would now consider traveling and working abroad. When asked if their understanding of the other country's program and education levels had increased, 100% of the participants from UVM and 50% of the participants from Bond University responded "yes." When students from Bond University were asked if the benefits of the collaboration outweighed the disruption of their class schedules, 79.17% of the responses were positive. The students from Bond University commented that the collaboration was very enjoyable and informative and that they "would recommend it to become an annual undertaking" (Bond Student 23). Many of the host and visiting students expressed interest in future international opportunities but cited multiple barriers preventing them from taking advantage of such opportunities (Table 6).

When faculty members were asked if the benefits of the visit outweighed the disruption to the normal schedule, 82% answered "yes." Most of the faculty members (63.64% of respondents) expressed interest in teaching a course abroad or visiting a university abroad, short term. Another 54.55% of faculty members expressed interest in an international research collaboration. Table 7 shows faculty members' interest in future opportunities. As 1 participant stated, "It was a great experience to meet the [UVM] staff and students and have an opportunity to discuss differences in

Table 6. Barriers to Future Travel[a]

Barrier to Future Travel	Students From University of Vermont (n=12)	Students From Bond University (n=26)
Money	6 (50)	13 (50)
Time	4 (33.33)	0 (0)
Visa issues	2 (16.67)	3 (11.54)
Licensure issues	3 (25)	8 (30.77)
Fear	2 (16.67)	0 (0)
Relationship ties	6 (50)	3 (11.54)
Lack of knowledge	5 (41.67)	5 (19.23)
Other	1 (8.33)	7 (26.92)
Not completed	0 (0)	3 (11.54)

[a]Data are reported as number (percentage) of students.

Table 7. Faculty Interest in Future Opportunities

Opportunity	No. (%) of 11 Faculty Members to Whom the Opportunity Was Appealing
Short-term visit to a university outside Australia	7 (63.64)
Sabbatical abroad for half-year	3 (27.27)
Sabbatical abroad for 1 year	2 (18.18)
International research collaboration	6 (54.55)
Organizing a student trip abroad	4 (36.36)
Teaching a continuing education course abroad	7 (63.64)
Attending a continuing education course abroad	1 (9.09)
None; I am not considering traveling	0 (0)
Other comment ... "I am not sure"	1 (9.09)

the profession and approaches to teaching. It was good to see the similarities. International collaboration is invaluable" (Bond Faculty 11).

DISCUSSION AND CONCLUSION

The literature has shown that students benefit from short-term immersion experiences,[5–10,12–16,18,19] and the results of the present study support this finding for physical therapist students and their hosts. Analysis of the data identified 3 themes: learning, collaboration, and experiencing the "other." These themes were similar to those identified in other short-term immersion studies.[10,12,15,16,18,19]

The first theme identified was learning, which is defined as "the activity or process of gaining knowledge or skill by studying, practicing, being taught, or experiencing something."[31] Participants in the collaboration learned much from their experiences, gaining both professional knowledge and personal knowledge. Personally, participants gained valuable life experiences from traveling as well as insight into their goals and values. This finding was demonstrated by 1 student who said, "This trip has provided me with confidence and values that I will carry with me as I start my rotations" (UVM Student 12). Current evidence supports this finding, with several studies showing that travel fosters students' self-awareness and broadens their worldview through experiential learning.[8,10,15,32]

Professionally, participants from both UVM and Bond University reported improvements in their manual techniques through the refinement of skills such as palpation and high-velocity thrusts. The overall experience was described as "very beneficial, especially for perfecting and refreshing our mobilization skills" (Bond Student 17). As the visitors, the participants from UVM learned about Australia's unique health care system. One participant stated, "Working with the [Bond] students and getting a general overview of the Australian health care system ... was fantastic. I was able to learn so much" (UVM Student 10). In exchange, Bond University participants felt that the UVM presence was a refreshing change and that they learned a great deal about the education of the UVM DPT program through discussions with the participants from UVM. One participant wrote, "Having the Vermont students attend lecture added a new aspect and excitement to class" (Bond Student 8). Another reported gaining "a better understanding of how the [American] education system is set out and a better understanding of the level of knowledge of [their] American colleagues" (Bond Student 23).

Learning is a notable theme of immersive travel. Grzelak and Glickman found that "personal and professional growth resulted from interacting and participating fully within the daily life of a culture different from the student's own."[15(p203)] The Grzelak and Glickman study is similar to the international collaboration in the present study in the sense that the participants from UVM were fully immersed in the daily activities of their peers from Bond University. The students from UVM studied in the same classrooms, lived in the same campus housing, and learned from the same instructors. Therefore, both groups of participants gained insight into the lives of their international colleagues; their experiences expanded their awareness of the world and resulted in personal growth.

Compared with other immersion studies, the present immersion study is unique because of its emphasis on the learning of manual physical therapy techniques. This type of professional growth is not common in immersion studies; however, certain aspects of professional development, such as the "improved ability to work cross-culturally, and the ability to clarify and commit to professional goals,"[12(p369)] are recognized benefits.

The second theme identified was collaboration. Collaboration is an inherent benefit of any organized international immersion experience and has been well documented in the student immersion literature.[5,6,8–16] Collaboration among health care professionals is an essential element within the physical therapist scope of practice, as illustrated in the American Physical Therapy Association Vision 2020 statement, which states that all physical therapists should be capable of autonomous and collaborative practice in all settings, including internationally.[33] Students and faculty members from both universities who participated in the present study reported many benefits of collaboration, such as the exchange of knowledge, the formation of lasting relationships between colleagues, the opening of opportunities for travel through future collaborations, and the advancement of research. One participant from Bond University noted "It was good to be exposed to physiotherapists from around the world getting different perspective on techniques and their experiences" (Bond Student 26). Another participant reflected, "Meeting people and working with different learning styles was helpful for learning and retention" (UVM Student 12). Participants appeared to find that working with their international peers was a great form of motivation and a refreshing change.

When participants collaborate, they benefit from exposure to a "diverse source of knowledge and experience, which contributes positively to the learning process."[34(p28)] Students who struggle with different interpretations of a situation benefit through their strengthened ability to critically reason, and the dialogue produced among participants leads to a better overall comprehension of the topic.[34] A study of the effects of international fieldwork partnerships between Canadian occupational therapist students and 6 different host locations revealed similar results of collaboration.[35] Over the course of 10 years, the study showed that partnerships fostered research and led to the development of several practice guidelines. Additionally, these partnerships increased the number of collaborations between university faculty members and led to the development of multiple community programs in Cameroon.[35]

The third theme identified was experiencing the "other," defined as the observations made from immersion in the classroom, residence hall, and city. Often theme 3 involved the refinement of previous expectations. The experience itself changed the perspectives of the participants from UVM on both the host country and their international peers. Upon arrival in Australia, the participants were asked to reflect on their expectations for the trip. One participant wrote, "I expect many aspects of Australian life can be quite different from what I have in the [United] States" (UVM Student 8). Many of the student participants from UVM reported feeling anxious to be learning alongside the participants from Bond University. Another student wrote, "Before we arrived I thought that the Australian physiotherapy students would have advanced manual skills that far surpassed the manual skills we were taught in the US" (UVM Student 7). The students were put at ease when they actually met and compared skills. Participants also noted that some of the more memorable first impressions were the country's natural beauty, the warmth of the Australian people, and the diversity of its citizens. Another participant wrote, "From the surface it could be part of the US, but as I have talked to the people and looked a little deeper, the culture and people are different" (UVM Student 2).

Maltby and Abrams discovered a similar shift in the perspectives of participants during an international immersion experience in Bangladesh; the first contact with the hosts had a lasting impact on the participants' perspectives on the experience.[9] The participants in that study were confronted with dramatic cultural differences in Bangladesh, which gave them the opportunity to "think about what they were seeing and how it related to their own experience and what they were

learning."[9(p0] In contrast, the participants in the international collaboration in the present study traveled to a place that was culturally similar, forcing the participants to gain insights about the experience through direct interactions with their international peers. These interactions had a marked impact on the overall perspectives of each cohort on the experience. One student wrote, "The Bond students … have been extremely welcoming and willing to include us in any/all activities. They have seemed very open to our presence and willing to work through the new material with us" (UVM 3). Another student was thoughtful in pointing out the differences in the group dynamics between the participants from Bond University and the participants from UVM, noting that in the cohort from Bond University, "the collective group effort is what is valued over the individual accomplishment" (UVM Student 11). Participants from Bond University identified with experiencing the "other" through their interactions with the participants from UVM in the classroom. A student participant from Bond University noted, "the "experience has showed me how international physiotherapy practices are. This has improved the confidence in my learning as it has solidified that my practice is similar to what is occurring in North America" (Bond Student 1).

Faculty members who participated in the present study also reported multiple benefits of the experience. One faculty member noted that the experience was a "very worthwhile visit. I was more than happy to contribute and collaborate with the sessions" (Bond Faculty 9). Another faculty member commented that the experience was "extremely beneficial for students and staff alike. Obvious sharing of invaluable knowledge on current research topics being undertaken over both sites and also shared competencies between students" (Bond Faculty 10). When faculty members were asked how their perceptions of American physical therapists had changed over the course of the experience, 1 participant stated, "I was interested to see and hear about the level of manual therapy being taught into the program at UVM. It was far greater than what I had anticipated" (Bond Faculty 10). It is interesting that both student participants and faculty participants were expecting to find greater differences in manual therapy education levels between the programs, when in fact many similarities existed.

A limitation of the present study was the format of data collected. Having only prompted journal entries limited the depth and breadth of the qualitative data from the participants from UVM. Although the prompts provided the researchers with the data necessary to analyze the effects of the trip, it limited the participants from being able to write freely about experiences that were important to them. We recommend that future studies include more daily reflection journalizing. The inclusion of semistructured interviews of participants could also provide greater depth and understanding of participants' experiences. The format of the program evaluation was different for the participants from Bond University, who were given a survey. Because the open-ended questions were matched with the journal prompts for the students from UVM, interpretation of the data was still possible. However, we recommend that all participants complete the same procedures for program evaluation in future studies, if possible.

Another limitation of the present study was the self-selected participant pool from the visiting university. Many barriers may have limited students from applying for the program. One of the greatest barriers can be the cost of traveling abroad. A solution to this problem is offering student funding to reduce the cost and allow more accessibility. Another solution is bringing the international educators to the students. Likewise, technology can be used to bring classrooms together through video conferencing. It would be interesting to study whether such a virtual connection could create similar opportunities for collaboration, learning, and experiencing the "other." In addition, future research could fully assess the effects of an immersion experience on participants' cultural competency. Although observations made by the researchers seemed to suggest that some level of cultural competency was gained, this project was not designed to appropriately measure such a result. Future studies could include a cultural competency tool to properly assess any gain.

This international manual therapy collaboration between UVM and Bond University successfully initiated new dialogue about international collaboration and fostered several opportunities for visiting students, host students, and faculty members. We hope that this method will serve as a model for future international collaborative efforts. Students and faculty members play critical roles in the promotion of internationalization through their involvement in academic collaborations. This article describes a working model for future collaborative immersion opportunities between physical therapy education programs with the aim of preparing emerging professionals to work in an increasingly global health care arena.

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Appendix 1. Journalizing Prompts for Participants From University of Vermont

1. Thinking over our preparations (readings, meetings, visa, ticket, forms, etc) for this trip to Australia, what are some of your expectations for (a) yourself; (b) your fellow classmates; (c) faculty? Do you feel ready: why or why not?
2. What are your first impressions here in Australia? What surprised you?
3. Based on your interactions with Australian physical therapist students, do you feel you have a better understanding of Australian physical therapist education levels?
4. Have your perceptions of Australian physical therapists changed due to your participation in this international manual therapy collaboration?
5. If you answered "yes" in the question above, have your perceptions changed for the better or for the worse?
6. Please explain how your perceptions have changed.
7. What were your expectations of the Australian students before we arrived? In what ways did they differ or meet your expectations?
8. Did you discover what the Australians are proud of and what their accomplishments and strengths are?
9. What have you noticed that Australians value in life, their studies, their relationships, their careers, etc?
10. What surprised you the most about your time abroad?
11. What did you appreciate the most from your abroad experience?
12. Have you started considering traveling, working, or studying outside of your home country based on your participation in this international manual therapy collaboration?
13. What obstacles prevent you from studying or working abroad?
14. What have you learned from participating in this international manual therapy collaboration? What can you apply on your return home?
15. What was your favorite experience when you were abroad?
16. Which experience had the most impact on you personally?
17. Do you have other comments on your participation with the University of Vermont international manual therapy collaboration?

Appendix 2. Open-Ended Survey Questions for Students From Bond University

1. The visit of the Doctor of Physical Therapy students from the University of Vermont no doubt disrupted your normal schedule. Do you feel the benefits of the visit outweighed the disruption in your normal schedule?
2. Based on your interactions with the physical therapist students from the University of Vermont, do you feel you have a better understanding of American physical therapist education levels?
3. Have your perceptions of American physical therapists changed due to your participation in this international manual therapy collaboration?
4. If you answered "yes" in the above question, have your perceptions changed for the better or the worse?
5. Please explain how your perceptions of American physical therapists have changed.
6. What were your expectations of the American physical therapist students before they arrived?
7. In what ways did they differ or meet your expectations?
8. Have you started to consider traveling, working, or studying outside of your home country based on your participation in this international manual therapy collaboration?
9. What obstacles prevent you from studying or working abroad?
10. Do you have other comments on your participation with the University of Vermont international manual therapy collaboration?

Appendix 3. Open-Ended Survey Questions for Faculty From Bond University

1. The visit of the Doctor of Physical Therapy students from the University of Vermont no doubt disrupted your normal schedule. Do you feel the benefits of the visit outweighed the disruption in your normal schedule?
2. How much time did you spend preparing for the visit of the students from the University of Vermont?
3. What took the most amount of your time and effort?
4. Based on your interactions with the physical therapist students from the University of Vermont, do you feel you have a better understanding of American physical therapist education levels?
5. Have your perceptions of American physical therapists changed due to your participation in this international manual therapy collaboration?
6. If you answered "yes" in the above question, have your perceptions changed for the better or the worse?
7. Please explain how your perceptions of American physical therapists have changed.
8. Have you started to consider traveling, working, or studying outside of your home country based on your participation in this international manual therapy collaboration?
9. Which of the following opportunities would be most appealing to you? Short-term visit to a university outside Australia, half-year sabbatical abroad, year sabbatical abroad, international research collaboration, organizing a student trip abroad, teaching a continuing education course abroad, attending a continuing education course abroad, none, and other.
10. What obstacles prevent you from engaging in an international experience?
11. Do you have other comments on your participation with the University of Vermont international manual therapy collaboration?

Appendix 14 International Collaboration Poster

International Collaboration in Manual Therapy: An Opening of Ideas and Opportunities

Karen C. Westervelt PT, MS, FAAOMPT, OCS, PGDipHSC, ATC, CMP, Celia Ellis BS*, Leighann T. Ellis BS*, Amanda Quanstrom BS*, Kimberly D. Wallingford BS*, and Hendrika Maltby PhD, RN, FACN, Wayne Hing PhD, PT

*2nd year UVM DPT students

Background/Purpose

Internationalization allows the world of higher education to become more connected. Partnerships and connections between physical therapy education programs internationally open new opportunities for learning and cultural exchange. Relatively few international collaborative immersion experiences have been described in the physical therapy literature. The purpose of this study was to discover the meaning and value of an international collaborative immersion experience for physical therapy students, both for the traveling students and the hosts. Additionally, this study established a design for international collaboration between physical therapy education programs.

Teacher demonstrating on a student.

Students at aboriginal cultural experience

Students with kangaroo

UVM Students and staff with Bond Staff.

Methods

Eleven University of Vermont (UVM) 3rd year Doctorate of Physical Therapy (DPT) students and one postgraduate student traveled to Bond University in Australia for a two week immersion experience. While abroad, students participated in manual therapy coursework, seminars, and cultural activities. Throughout the experience journal data was collected from the UVM participants. Bond University students and faculty were given a reflective survey after the experience. Interpretative Phenomenological Analysis methodology was applied to qualitative data to determine the meaning of this collaborative experience.

UVM students practicing their manual techniques.

Results

The following themes emerged: 1) Learning, the acquisition of new skills both professionally and personally, 2) Collaboration, development of new relationships and opportunities with staff and students, 3) Experiencing the 'Other', observations made from immersion while abroad.

Table 1. UVM and Bond University Student Demographics

		University of Vermont Students (n=12)	Bond University Students (n=26)
Age	18-23	7 (58.33%)	7 (26.92%)
	24-29	3 (25%)	15 (57.69%)
	30+	2 (16.67%)	3 (11.5%)
	Not answered		1 (3.85%)
Gender	Female	7 (58.33%)	12 (46.15%)
	Male	5 (41.67%)	13 (50%)
	Not answered	0 (0%)	1 (3.85%)
Country(s) of Citizenship	Australia	0 (0%)	9 (34.62%)
	United States	11 (91.67%)	7 (26.92%)
	Canada	0 (0%)	7 (26.92%)
	Hong Kong	0 (0%)	1 (3.85%)
	Japan	0 (0%)	1 (3.85%)
	China	1(8.33%)	0 (0%)
	Not Answered	0 (0%)	1 (3.85%)

"[This opportunity] has provided a depth and breadth of experience that would have been difficult to gain through on-campus learning only" – UVM 20 *(Learning)*

"…[My] favorite experience [was] that both the American and Australian PT students and faculty [were] working together to learn manual techniques from [a leader in manual therapy]." – UVM 18 *(Collaboration)*

"From the surface [Australia] could be part of the US, but as I have talked to the people and looked a little deeper, the culture and people are different." – UVM 2 *(Experiencing the 'Other')*

Discussion/Conclusion

Themes identified were similar to ones established within the literature. UVM students gained life experiences about traveling and insight into their personal and professional goals. Bond participants expressed similar gains and a positive response to this collaboration. The international manual therapy collaboration between UVM and Bond University has successfully initiated new dialogue about international collaborations, and fostered several opportunities for students and faculty. This study supports the potential for future collaborative immersion opportunities between education programs to prepare emerging professionals to work in an increasingly global environment.

UVM student practicing manual technique.

Teacher demonstrating on a student.

Future Research

Long term follow up studies to determine if short term immersion experiences have lasting impacts on student learning and professional pathways.

Acknowledgements

The authors would like to thank Professor Wayne Hing and his staff at Bond University Physiotherapy Program for enabling this collaboration and for such gracious hospitality. The authors would also like to thank Sonya Worth PT, FAAOMPT, OCS, PGDipHSc for her organizational skills and leadership throughout this collaboration and Kristina Kelly SPT, EdM, NASM-CPT, NASM-PES for her editorial assistance.

Appendix 15 The University of Vermont Ethics Approval for Mentoring Project

The UNIVERSITY of VERMONT
Committees on Human Subjects
Serving the University of Vermont
and the UVM Medical Center

RESEARCH PROTECTIONS OFFICE
213 Waterman Building
85 South Prospect Street
Burlington, Vermont 05405
(802)656-5040 ph
www.uvm.edu/irb/

Protocol Exemption Certification

TO:	Karen Westervelt
FROM:	Sarah Wright, Research Review Analyst
DATE OF CERTIFICATION:	22-Aug-2016
SUBJECT:	CHRMS: 17-0080 An Innovative Model of International Clinical Mentoring for Physical Therapists: A Pilot Study

Following IRB review of your project, it has been determined that it qualifies for exemption, as indicated below.

Exemption Category: 2
Federal Exemption: "Research involving the use of educational tests (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures, or observation of public behavior, unless: (a) information obtained is recorded in such a manner that human subjects can be identified, directly or through identifiers linked to the subjects; and (b) any disclosure of the human subjects' responses outside the research could reasonably place the subjects at risk of criminal or civil liability or be damaging to the subjects' financial standing, employability, or reputation."

This exemption is effective for the duration of the project UNLESS modifications are made that affect the original determination of exemption.

cc: Jeremy Sibold

Note: If this project is the study of cancer or is cancer-related, it may require review by the University of Vermont Cancer Center prior to any research activities.

Appendix 16 The University of Vermont Ethics Amendment Approval for Mentoring Project

The UNIVERSITY of VERMONT
Committees on Human Subjects
Serving the University of Vermont
and the UVM Medical Center

RESEARCH PROTECTIONS OFFICE
213 Waterman Building
85 South Prospect Street
Burlington, Vermont 05405
(802)656-5040 ph
www.uvm.edu/irb/

Protocol Exemption Certification

TO:	Karen Westervelt
FROM:	Sarah Wright, Research Review Analyst
DATE OF REVIEW:	30-Sep-2016
DATE OF AMENDMENT:	
SUBJECT:	CHRMS: 17-0080 An Innovative Model of International Clinical Mentoring for Physical Therapists: A Pilot Study

Thank you for submitting the proposed modification to this exempt project. Following IRB review, it has been determined that the project still qualifies for exemption as indicated below.

Exemption Category: 2
Federal Exemption: "Research involving the use of educational tests (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures, or observation of public behavior, unless: (a) information obtained is recorded in such a manner that human subjects can be identified, directly or through identifiers linked to the subjects; and (b) any disclosure of the human subjects' responses outside the research could reasonably place the subjects at risk of criminal or civil liability or be damaging to the subjects' financial standing, employability, or reputation."

This exemption is effective for the duration of the project UNLESS modifications are made that affect the original determination of exemption.

cc: Jeremy Sibold

Appendix 17 Bond Information Sheet for Mentoring Project

7/08/16

Title of Study: **An Innovative Model of International Clinical Mentoring for Physical Therapists: A Pilot Study (**BUHREC Protocol # 0000015277)

My name is Karen Westervelt and I am currently completing a PhD at Bond University under the supervision of Professor Wayne Hing.

I am conducting a research investigation into an innovative international distance mentoring strategy for novice physiotherapists. I am specifically interested in your impressions of this style of mentoring on your clinical practice.

As part of this study, I will invite you to complete a pre-participation questionnaire, partake in 4 one hour video conference group mentoring sessions with a clinical expert, the fourth session will include a focus group discussion with me and possibly other key personnel, followed by completion of a post participation questionnaire. Clinical mentors can expect 2 additional 1 hour video conference sessions. For the mentoring sessions, each novice clinician will be invited to select a de-identified spinal pain case study that they find challenging to share with the group for a discussion related to diagnosis and treatment. All members of the group will be invited to participate in the case discussion facilitated by the clinical expert.

Distance mentoring sessions will take place on a Bond University Community iLearn site over a 6 week period of time. You will be asked your name and email address to grant you access to the iLearn site and for financial incentives. This identifying information will only be used for these 2 purposes and will be kept separate from all other data to maintain your confidentiality. Novice clinicians will be asked questions related in self-confidence and self-efficacy in their own clinical practice. All participants will be asked questions related how effective this pilot design worked for them individually and what could be changed to make an even more effective mentoring experience. All participants will be asked general

demographic questions. At all times participants have the option to not answer questions or to not present a case study. This will not affect their ability to remain in the study.

Participation in this study is completely voluntary and you may withdraw at any time without risking any negative consequences. If you choose to withdraw your participation in this study, the information you have provided will be immediately destroyed. All the data collected in this study will be treated with complete confidentiality and not made accessible to any person outside of the key personnel and researchers working on this project. The information I obtain from you will be dealt with in a manner that ensures you remain anonymous. Data will be stored in a secured location at Bond University for a period of 6 years in accordance with the guidelines set out by the Bond University Human Research Ethics Committee.

It is anticipated that the data collected during this study will assist us in understanding the effects of participation in an international distance clinical mentoring program on clinical practice. Your participation in this research study will enhance work towards future research in clinical mentoring and the establishment of clinical mentoring programs.

If you experience distress from participation in this research, please contact: Karen.Westervelt@student.bond.edu.au.

Should you have any complaints concerning the manner in which this research is being conducted please make contact with –

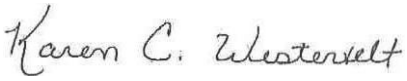
Bond University Human Research Ethics Committee, Bond University Office of Research Services.

Bond University, Gold Coast, 4229, Australia

Tel: +61 7 5595 4194 Fax: +61 7 5595 1120 email: ethics@bond.edu.au

We thank you for taking time to assist us with this research.

Yours sincerely,



Karen Westervelt MS, PT, ATC, FAAOMPT, PGDipHSc, CMP

Phd Student at Bond University and Lecturer in Rehabilitation and Movement Science at the University of Vermont

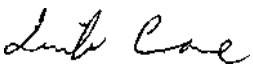
Dr. Wayne Hing

Professor of Physiotherapy

Doctor of Physiotherapy Program

Faculty of Health Science and Medicine

Bond University



Dr. Linda Crane

Dean Learning and Teaching

Faculty of Health Science and Medicine

Bond University

Dr. Jeremy Sibold

Associate Professor, Chair of Rehabilitation and Movement Science, Program Director of the Exercise and Movement Science

The University of Vermont

Bond University | Gold Coast, Queensland, 4229, Australia

CRICOS Provider Code: 00017B

Appendix 18 University of Vermont Information Sheet for Mentoring Project

Research Information Sheet

Title of Study: **An Innovative Model of International Clinical Mentoring for Physical Therapists: A Pilot Study**

Principal Investigator (PI): Karen C Westervelt PT, ATC, MS, FAAOMPT, OCS, CMP

Faculty Sponsor: Dr. Jeremy Sibold ATC 

Introduction

You are being invited to take part in this research study because you are a recent alumni of the University of Vermont Physical Therapy Program or Bond University Physiotherapy Program or you are a clinical expert in Physiotherapy. This study is being conducted by Karen Westervelt at the University of Vermont.

Purpose

The purpose of this research is to study a pilot program of distance international clinical mentoring. There is a need for continued structured learning from a clinical mentor as new graduates transition from being a student to being a physical therapist. Access to a mentor in the clinical setting is not always possible nor is the ability to enroll in a formal residency program with mentoring. The need for clinical mentors appears to be a universal issue for novice clinicians around the world. Therefore the purpose of this study is to pilot an international approach to distance clinical mentoring for novice clinicians.

Study Procedures

If you take part in the study, you will be asked to partake in 4, 1 hour, clinical mentoring video conference calls with 3 novice clinicians and 1 clinical expert/ mentor. Each novice clinician will be invited to select a de-identified spinal pain case study that they find difficult to share with the group for a discussion related to diagnosis and treatment. All members of the group will be invited to participate in the case discussion facilitated by the clinical expert.

Participants will be asked to complete a pre-participation and a post-participation on line survey and asked to identify goals for the mentoring sessions prior to the start of the project and to reassess these individual goals at the end of the project. All participants will be assigned to a mentoring group with a clinical expert. All participants will be granted access on an online course site through Bond University BlackBoard platform where they can each post a case for discussion and access the video conference calls. At the completion of the 4 video conference calls participants will be invited to be part of a focus group discussion about the mentoring experience. Clinical experts / mentors will be invited to participate in 2 additional sessions, a pre-conference call session to learn about the technology and format for the mentoring sessions and a final focus group with the clinical mentors and the key research personnel.

Novice clinicians will be asked questions related in self-confidence and self-efficacy in their own clinical practice. All participants will be asked questions related how effective this pilot design worked for them individually and what could be changed to make an even more effective mentoring experience. All participants will be asked general demographic questions. At all times participants have the option to not answer questions or to not present a case study. This will not affect their ability to remain in the study.

Your participation will be over a 6 week period. It is expected that novice clinicians will have at most 5 hours and 30 min of total participation time over a 6 week period. This will include on line pre and post participation surveys, four -1 hour group video conference sessions and time for you to prepare and post a case study and clinical question of your choice. It is expected that the expert clinician mentors will have at most 7 hours and 30

min of total participation time. The two additional hours for clinical mentors include a pre-training session and a final focus group.

Benefits

As a participant in this research study, there may direct benefit for you in the form of a perceived change in your clinical practice from working with a clinic mentor and international peers; however, it is also possible that you do not perceive direct benefit to you from participating. Regardless, the information from this study may benefit other people now or in the future and the research team values your input.

Risks

We will do our best to protect the information we collect from you during this study. We will not collect any information in your survey responses or focus group discussion that will identify you to further protect your confidentiality and avoid any potential risk for an accidental breach of confidentiality.

Costs

There will be no costs to you for participation in this research study.

Compensation

If you are a novice clinician taking part in this research study, we will give you a $40 AUS gift voucher to thank you for your time and as an incentive to complete all parts of the study. If you choose to withdrawal from the study before completing the post mentoring survey and the final focus group, you will not receive this incentive.

If you are an expert clinician / mentor taking part in this research study, you will be compensated for your time and inconvenience. You will be compensated $300 AUS. Compensation will come from Bond University as a gift voucher upon completion of the final focus group. If you choose to withdrawal from the study before the final focus group,

your compensation will be prorated proportionally to the number of video conference sessions attended.

Confidentiality

Your data will be identified in the research records by a code name or number. There will be no list that links your identity with this code. All surveys and focus group data in electronic version will be kept on a secure system, on a password protected computer in a locked office within a locked suite. Your name will not appear in any publication as only the group will be identified. Any quotes used as a part of any publication or presentation will be devoid of any identifying characteristics. Only the research team members will have access to the data. Representatives of the Institutional Review Board and regulatory authorities will be granted direct access to your research records for verification of procedures and/or data. Data will be kept for 6 years.

In the focus groups, questions are directed to the group, not to individuals. You have the right to not answer a question or withdraw from the study at any time in the process. We will ask that everyone in the group not repeat what they have heard others say, but there is always the chance that someone will repeat what you have said. Everything you say will be kept confidential by the researchers.

You may be requested to provide your name, email address and country in which you reside. This information will be disclosed one time to Bond University's Procurement Services Department for purposes of issuing vouchers for your participation in this study. This information will also be used one time by the PI in order to provide you with login credentials to the Bond University iLearn Community site used to communicate with participants for this project. Information gathered for this purpose will be stored separately from your survey and focus group responses.

At the end of the survey, you will be asked for some information about yourself that will be used for purposes of providing you with additional information regarding postprofessional

educational program. Completing this section is option. Information gathered for this purpose will be stored separately from your survey.

Voluntary Participation/Withdrawal

Taking part in this study is voluntary. You are free to not answer any questions or withdraw at any time. You may choose not to take part in this study, or if you decide to take part, you can change your mind later and withdraw from the study

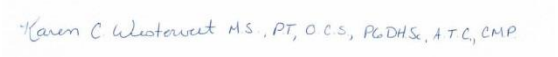
Questions

If you have any questions about this study now or in the future, you may contact me Karen C Westervelt at the following phone number 802 656 3268 or Karen.Westervelt@med.uvm.edu. If you have questions or concerns about your rights as a research participant, then you may contact the Director of the Research Protections Office at (802) 656-5040.

Participation

Your participation is voluntary, and you may refuse to participate without penalty or discrimination at any time.

Please print this information sheet for your records before continuing.



Karen C. Westervelt

Name of Principal Investigator: Karen Westervelt

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Appendix 19 Recruitment Criteria for Online Clinical Mentoring Project

1. Physical therapist or Physiotherapist with less than 2 years of experience.
2. Presently working in an outpatient musculoskeletal setting 20 hours or more a week.
3. Treat patients with spinal pain on regular case load.
4. Philosophy of patient care is a general treatment approach including therapeutic exercise and manual therapy. Not a specialty focus of only using yoga, work hardening, McKenzie, or some other specialty focus.
5. Not enrolled in or completed a formal residency program or other program with formal clinical mentoring.
6. Have 4 hours of time (during a 6 week period) and could attend a video conference on the computer.
7. Have access to a computer with internet connection.
8. Available for morning or weekend mentoring sessions if living in the Southern Hemisphere. Available for evening or weekend mentoring sessions if living in the Northern Hemisphere.
9. Willing to complete pre and post online surveys about this mentoring experience.

Appendix 20 Pre- and Post-Participation Questionnaires for Clinical Experts/Mentors

Italicized questions are being asked to both experts and novices.

Pre participation questionnaire for clinical experts / mentors

Please note: the following questions will be entered into UVM Lime Survey Tool.

Thank you for participating in the research project, entitled "An Innovative Model of International Clinical Mentoring for Physical Therapists: A pilot study". Please answer the following questions.

Pre Participation Questionnaire

1. Please describe your professional qualifications: (select all that apply) Physiotherapist, post graduate certificate, post graduate diploma, advanced Master's degree, PhD, Board Certified Clinical Specialist, Fellow, other _____
2. In what country did you get your entry-level degree? New Zealand, Australia, USA, other _____
3. *How many years of clinical experience do you have? Drop down #s 1-35 years*
4. What percentage of your time is spent in clinical practice ___, teaching ____, research____, administration____, other_____?
5. Have you participated in a formal mentoring training program before? No Yes
    a. If yes, please describe _____
6. Have you been trained in a particular clinical decision making model that you use for your teaching or clinical practice? No Yes
    a. If yes, what model do you use? _____
7. *In your opinion, what is the most important thing for a novice clinician to focus on to gain confidence and efficacy in his or her clinical practice? Long response*

Post-participation questionnaire for clinical experts / mentors

1. *Please rate your overall impression of this experience 1,2,3,4,5,6,7,8,9,10 (Key: 1 = terrible 5=Neutral 10= excellent)*
2. In addition to the 4 - 1 hour calls, and the 1 hour introduction and 1 hour focus group, how many additional hours did you put into this? 0- 30 min, 31-60 min, 61-90 min, 91-120 min, more than 2 hours
3. *In your opinion what would be the ideal total length of time for a mentoring program? Shorter than this pilot, this duration 4 hours over 6 weeks, longer than this pilot*
4. How many novices attended each call 1 ___, call 2 _____, call 3____, call 4_____?
5. *Was the group size of 3 appropriate? Yes No*
    a. *If NO, How many novices to 1 clinical expert would you prefer? 1:1, 2:1, 4+:1*
6. *Would you have liked more training before starting? No Yes*
    a. *If Yes, Please select the type of training you would have liked. CDM models, models for presenting clinical questions, mentor /mentee relationship expectations, goal setting, other _____ please explain.*
7. *Would you have liked more technical support? Yes No*
8. *Was it useful to establish goals at the beginning of this project? Yes or No with Comment option*
9. *In your opinion, what is the most important thing for a novice clinician to focus on to gain confidence and efficacy in his or her clinical practice? Long response*
    a. *Was this supported in this study?*
10. Beyond clinical decision making coaching what other skills would you have liked to guide this group through to help them feel successful in this profession? Long response
11. *Would you participate in a distance mentoring program again? Yes, no , maybe*
12. Ultimately this mentoring pilot could lead to the development of a post professional program that combines mentoring with didactic teaching and

face to face labs. Do you feel these 3 components would be effective for supporting novice clinicians? YES NO

13. If no please explain
    a. Would you recommend adding an element to a future program? No Yes
        i. If yes, What would you add?
14. Did being a mentor have an impact on you? Yes or No. If yes please select all of the following impacts you experienced: reinvigorated interest in the profession, professional growth, positive feelings of being able to "give back", interest in expanding your own education, other _____ Please explain.
15. Even though you are considered an expert in the field, do you believe you could benefit from having a mentor yourself? Yes or No If yes, what general areas would you like to be mentored in?
16. *Please comment on any other changes we can make to improve this model. Long response*

Focus group question for clinical experts / mentors

1. *What elements of this model would you keep ,ie strengths of this model?*
2. *What elements of this model would you entirely scrap?*
3. *What elements would you change / adapt?*
4. *What were the most valuable outcomes of your participation?*
5. *What were your most unexpected outcomes?*
6. *Did having international peers make a difference? If so what do you feel you gained by having an international group?*

Appendix 21 Pre- and Post-Participation Questionnaires for Novice Clinicians

Italicized questions are being asked to both experts and novices.

Underlined questions are being asked to novices 2 x at the beginning 1 week apart and 1x at the end

Pre participation questionnaire for novice clinicians:

Please note: the following questions will be entered into UVM Lime Survey Tool

Thank you for participating in the research project, entitled "An Innovative Model of International Clinical Mentoring for Physical Therapists: A pilot study". Please answer the following questions.

Pre Participation Questionnaire

1. Select your school and graduation year. Bond 2016, Bond 2015, UVM 2016, UVM 2015
2. What is your age? _____
3. What is your gender? Male Female Other _____
4. Would you describe the location you work as rural or urban suburban?
5. What percentage of your case load is musculoskeletal patients? 0-25%, 26-50%, 51-75%, 76-100%
6. What percentage of your case load is patients with spinal pain? 0-25%, 26-50%, 51-75%, 76-100%
7. *In your opinion, what is the most important thing for a novice clinician to focus on to gain confidence and efficacy in his or her clinical practice? Long response*
8. What do you do when you have a difficult patient you don't know how to help? (Select all that apply) Search the literature, talk with a colleague you work with, talk with a colleague you do not work with, talk with an informal mentor, refer the patient elsewhere,
9. other _____
10. Please rank your interest in post professional PT/ physiotherapy education (5= I am considering attending a post professional program, 4 = very

interested, 3 = somewhat interested, 2 = a little interested, 1= not interested) 1,2,3,4,5

11. What areas of post professional education are most interesting to you? (Select all that apply) Mentoring, advanced treatment skills, obtaining specialization, other ____.

12. What benefits do you perceive from obtaining post professional education?

13. What barriers prevent you from obtaining post professional education? Access, Cost, time away from work, time away from home, lack of perceived benefit to my practice, lack of perceived benefit to my employer, other… please explain.

14. Have you spent time outside of your country of origin? No Yes

a. If yes, was your time abroad for holiday, academics, work or other?

15. Do you have experience with physical therapists from other countries? No Yes

a. If yes, please explain

16. Are you interested in pursuing future international PT collaborations? No Yes

17. Is this your first career or do you have prior experience in another field? No Yes. If yes, was that field health-related? No Yes,, If yes, did you have a mentor? No Yes

18. Self-Efficacy Questionnaire

19. Please indicate how you feel about each statement by circling the response which best matches your opinion. (0 = not at all, 10 = completely agree)

Question	Rank
1). I feel adequately prepared to undertake a caseload of patients with spinal pain.	0 1 2 3 4 5 6 7 8 9 10
2). I feel that I am able to verbally communicate effectively and appropriately with patients with spinal pain.	0 1 2 3 4 5 6 7 8 9 10
3). I feel that I am able to communicate in writing effectively and appropriately about the patients with spinal pain on my case load.	0 1 2 3 4 5 6 7 8 9 10
4). I feel that I am able to perform subjective assessments for my patients with spinal pain.	0 1 2 3 4 5 6 7 8 9 10
5). I feel that I am able to perform objective assessments for my patients with spinal pain.	0 1 2 3 4 5 6 7 8 9 10
6). I feel that I am able to interpret assessment findings appropriately for my patients with spinal pain.	0 1 2 3 4 5 6 7 8 9 10
7). I feel that I am able to identify and prioritize problems for my patients with spinal pain.	0 1 2 3 4 5 6 7 8 9 10
8). I feel that I am able to select appropriate short and long term goals for my patients with spinal pain.	0 1 2 3 4 5 6 7 8 9 10
9). I feel that I am able to appropriately perform treatments for my patients with spinal pain.	0 1 2 3 4 5 6 7 8 9 10
10). I feel that I am able to perform discharge planning for my patients with spinal pain.	0 1 2 3 4 5 6 7 8 9 10
11). I feel that I am able to evaluate my treatments for my patients with spinal pain.	0 1 2 3 4 5 6 7 8 9 10
12). I feel that I am able to progress interventions for my patients with spinal pain.	0 1 2 3 4 5 6 7 8 9 10
13). I feel that I am able to deal with the range of patient conditions which may be seen with the patients with spinal pain on my case load.	0 1 2 3 4 5 6 7 8 9 10

20. Clinician Specific Outcome Scale:

Please identify 3 aspects of working with people with spinal pain that you would like to improve upon through participation in this clinical mentoring programs. Rate your current ability in these areas.

Scoring Scheme:

0 1 2 3 4 5 6 7 8 9 10

Unable to do — Able to do consistently at expert level

For example:

- I can ask my pt pointed interview questions to guide the subjective interview to best provide me with the info I need 0,1,2,3,4,5,6,7,8,9,10
- I can efficiently pick the right special tests to do to give me the most useful evaluation information. 0,1,2,3,4,5,6,7,8,9,10
- I can efficiently complete my evaluation in a timely manner that leaves me time for treatment 0,1,2,3,4,5,6,7,8,9,10
- I can appropriately treat my patient to promote an efficient rehabilitation process. 0,1,2,3,4,5,6,7,8,9,10

1._____

2._____

3._____

Post Participation novice questionnaire

1. *Please rate your overall impression of this experience 1,2,3,4,5,6,7,8,9,10 (Key: 1 = terrible 5=Neutral 10= excellent)*
2. How many video conference calls did you attend? 4,3,2,1
3. *In your opinion what would be the ideal total length of time for a mentoring program? Shorter than this pilot, this duration 4 hours over 6 weeks, longer than this pilot*
4. *Was the group size of 3 appropriate? Yes No*
    a. *If NO, How many novices to 1 clinical expert would you prefer?*
5. *Would you have liked more training before starting? No Yes*
    a. *If Yes, Please select the type of training you would have liked. CDM models, models for presenting clinical questions, mentor /mentee relationship expectations, goal setting, other _____ please explain.*
6. *Would you have liked more technical support? Yes No*
7. *In your opinion, what is the most important thing for a novice clinician to focus on to gain confidence and efficacy in his or her clinical practice? Long response*
    a. *Was this supported in this study? Yes, no, please explain*
8. Did participation in this project alter how you treated or would have treated the patient you discussed? Yes No
    a. If no, what constrained you?
9. What did you gain from participating in this research project? Select all that apply:

    increased awareness of international PT, improved confidence, improved clinical decision making, improved treatment session planning, new ideas for treatment, interest in attending more manual therapy education, increased commitment to learning, other, Comments _____.
10. Did this experience change your comfort level in treating patients from different cultural backgrounds
11. Did this experience change your perspective of the PT profession internationally? No yes
    a. If yes explain

12. Is there anything you noticed in the presentations/ discussions that surprised you that is different in another country? Long response
13. Is there anything you noticed in the presentations/ discussions that surprised you that was similar in another country? Long response
14. What common challenges did you learn that all PTs face internationally? Long response
15. Are you interested in pursuing future international PT collaborations? No Yes comment
16. *Was it useful to establish goals at the beginning of this project? Yes or No with Comment option*
17. *Would you participate in a distance mentoring program again? Yes, no , maybe*
18. Do you feel your participation in a mentoring program such as this one will have long term practice implications for you? Yes, No

19. Please indicate how you feel about each statement by circling the response which best matches your opinion. (0=not at all, 10=completely agree)

Question	Rank
1). I feel adequately prepared to undertake a caseload of patients with spinal pain.	0 1 2 3 4 5 6 7 8 9 10
2). I feel that I am able to verbally communicate effectively and appropriately with patients with spinal pain.	0 1 2 3 4 5 6 7 8 9 10
3). I feel that I am able to communicate in writing effectively and appropriately about the patients with spinal pain on my case load.	0 1 2 3 4 5 6 7 8 9 10
4). I feel that I am able to perform subjective assessments for my patients with spinal pain.	0 1 2 3 4 5 6 7 8 9 10
5). I feel that I am able to perform objective assessments for my patients with spinal pain.	0 1 2 3 4 5 6 7 8 9 10
6). I feel that I am able to interpret assessment findings appropriately for my patients with spinal pain.	0 1 2 3 4 5 6 7 8 9 10
7). I feel that I am able to identify and prioritize problems for my patients with spinal pain.	0 1 2 3 4 5 6 7 8 9 10
8). I feel that I am able to select appropriate short and long term goals for my patients with spinal pain.	0 1 2 3 4 5 6 7 8 9 10
9). I feel that I am able to appropriately perform treatments for my patients with spinal pain.	0 1 2 3 4 5 6 7 8 9 10
10). I feel that I am able to perform discharge planning for my patients with spinal pain.	0 1 2 3 4 5 6 7 8 9 10
11). I feel that I am able to evaluate my treatments for my patients with spinal pain.	0 1 2 3 4 5 6 7 8 9 10
12). I feel that I am able to progress interventions for my patients with spinal pain.	0 1 2 3 4 5 6 7 8 9 10
13). I feel that i am able to deal with the range of patient conditions which may be seen with the patients with spinal pain on my case load.	0 1 2 3 4 5 6 7 8 9 10

20. *Please comment on any other changes we can make to improve this model.*
Long response

21. Clinician specific outcome scale:

Please identify 3 aspects of working with people with spinal pain that you would like to improve upon through participation in this clinical mentoring programs. Rate your current ability in these areas.

Scoring scheme:

0	1	2	3	4	5	6	7	8	9	10
Unable To Do							able to do consistently		at expert level	

For example:

- I can ask my pt pointed interview questions to guide the subjective interview to best provide me with the info i need 0,1,2,3,4,5,6,7,8,9,10
- I can efficiently pick the right special tests to do to give me the most useful evaluation information. 0,1,2,3,4,5,6,7,8,9,10
- I can efficiently complete my evaluation in a timely manner that leaves me time for treatment 0,1,2,3,4,5,6,7,8,9,10
- I can appropriately treat my patient to promote an efficient rehabilitation process. 0,1,2,3,4,5,6,7,8,9,10

1._____

2._____

3._____

Novice Focus group questions post mentoring

1. *What elements of this model would you keep,ie strengths of this model?*
2. *What elements of this model would you entirely scrap?*
3. *What elements would you change / adapt?*
4. *What were the most valuable outcomes of your participation?*
5. *What were your most unexpected outcomes?*
6. *Did having international peers make a difference? If so what do you feel you gained by having an international group?*

Appendix 22 An Online Model of International Clinical Mentoring for Novice Physical Therapists Poster

An Online Model of International Clinical Mentoring for Novice Physical Therapists

Karen Westervelt PT, ATC, MS, FAAOMPT, OCS[1], Lora Banks BA[1], Carolyn Carney BA[1], Katrina Kunker BS[1], Ashley Magoon BS[1], MaryClaire McGovern BA[1], Jeremy Sibold EdD, PhD[1]; Linda Crane PhD[2]; Wayne Hing PhD[2]

[1]University of Vermont Department of Rehabilitation and Movement Science, College of Nursing and Health Science, Burlington, Vermont;
[2]Bond University, Faculty of Health Sciences, Gold Coast, Australia

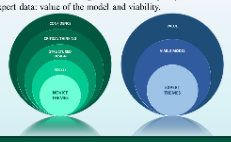
Background & Objectives

Clinical mentoring in physical therapy raises standards for professional development by developing strengths and eliminating weaknesses in novice clinicians.[1] Mentoring is particularly important for novice physical therapists who are developing skills and face insecurities with challenging patients.[2] For all new clinicians, the first few years of practice is a time for "continual development of professional identity, knowledge base, clinical reasoning and decision-making skills".[2(p478)] Physical therapists experience stress and insecurities transitioning from student to practitioner,[4] but these feelings can be mitigated by the introduction of a clinical mentor who can help the novice physical therapist adapt to their new position[2] which is ultimately important for job satisfaction and retention within the profession.[5] However several barriers exist that can limit a clinician's ability to obtain formal clinical mentoring including cost and accessibility.[3] Advances in technology and international collaboration can help to mitigate these barriers and help novice clinicians progress to skilled, confident clinicians—ultimately improving patient care.[3] Research exploring innovative strategies to reduce barriers and provide mentoring to novice clinicians is needed. Therefore the purpose of this study was to examine the effects of providing online clinical mentoring to small international groups of novice physical therapists treating patients with spinal pain in the outpatient setting.

Methods

Results

Four themes emerged from the novice qualitative data: improved confidence, enhanced critical thinking, appreciation of the structured design and accessibility to peers and mentors. Two themes emerged from the expert data: value of the model and viability.



Acknowledgements

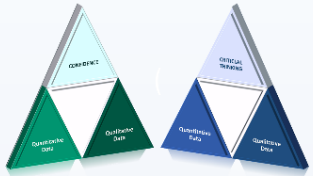
The authors would like to thank Alan Howard, MS, Director of the UVM Statistical Consulting Clinic for his statistical assistance and Shannon Mahoney, BS, for her assistance preparing the data for analysis.

Results Continued

Clinician Confidence Questionnaire for Patients with Spinal Pain

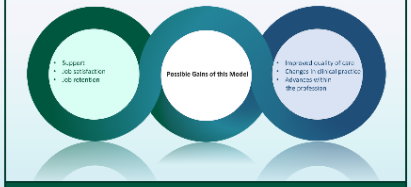
Questions	Mean Difference (Post-Intervention-Pre-Intervention) (SD)	P-Value
1. I feel confident in my ability to examine patients with spinal pain	0.75 (1.00)	0.031*
2. I feel I have the knowledge to perform an appropriate examination for patients with spinal pain	0.88 (0.78)	0.016*
3. I feel I have the skills to perform an appropriate examination for patients with spinal pain	0.88 (0.78)	0.016*
4. I feel confident in my ability to perform a differential diagnosis for patients with spinal pain	0.75 (1.04)	0.063
5. I feel I have the knowledge to perform a differential diagnosis for patients with spinal pain	0.88 (0.78)	0.016*
6. I feel I have the skills to perform a differential diagnosis for patients with spinal pain	0.88 (0.78)	0.016*
7. I feel confident in my ability to develop a plan of care for patients with spinal pain	0.75 (1.04)	0.063
8. I feel I have the knowledge to develop a plan of care for patients with spinal pain	0.88 (0.78)	0.016*
9. I feel I have the skills to develop a plan of care for patients with spinal pain	0.88 (0.78)	0.016*
10. I feel confident in my ability to perform manual therapy techniques for patients with spinal pain	0.63 (0.74)	0.031*
11. I feel I have the knowledge to perform manual therapy techniques for patients with spinal pain	0.75 (0.71)	0.016*
12. I feel I have the skills to perform manual therapy techniques for patients with spinal pain	0.75 (0.71)	0.016*
13. I feel confident in my ability to perform therapeutic exercise for patients with spinal pain	0.38 (0.74)	0.250
14. I feel I have the knowledge to perform therapeutic exercise for patients with spinal pain	0.50 (0.76)	0.125
15. I feel I have the skills to perform therapeutic exercise for patients with spinal pain	0.50 (0.76)	0.125
16. I feel confident in my ability to educate patients with spinal pain	0.38 (0.74)	0.250
17. I feel I have the knowledge to educate patients with spinal pain	0.50 (0.76)	0.125
18. I feel I have the skills to educate patients with spinal pain	0.50 (0.76)	0.125
19. I feel confident in my ability to perform a differential diagnosis for patients with spinal pain	0.63 (0.74)	0.031*
20. I feel I have the knowledge to perform a differential diagnosis for patients with spinal pain	0.75 (0.71)	0.016*
21. I feel I have the skills to perform a differential diagnosis for patients with spinal pain	0.75 (0.71)	0.016*

The quantitative data revealed significant improvement on 4 items from the confidence questionnaire, improvement of 1.48 points on self-selected clinical goals, and 82% reported improved clinical decision-making. This triangulation of data supported the finding that participation in this clinical mentoring model improved confidence and clinical decision making skills for novice participants. 100% of novice participants reported that participation in a clinical mentoring program would have long term practice implications.



Expert clinicians found value with this mentoring model as it filled a need within the profession and was a viable model on its own and as part of an educational program. All experts reported the intervention promoted professional growth and the ability to give back to their professional community.

Overall, the novices and experts rated their experience very positively with mean of 8.76/10 and all expressed interest in future mentoring programs.



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Results Continued

Limitations & Future Research

- This study utilized a small sample from only 3 countries with similar educational programming.
- It is unknown if the international aspect of this model would have worked as well if the members of the group came from very different educational backgrounds.
- Participants volunteered to participate in the project and may have biased the sample to a group interested in post professional education.
- Future research is recommended to study the transferability of this model to clinicians working in remote settings.
- Future research is recommended to determine additional means of supporting the transition from novice to confident independent practitioner.
- Future research is recommended to determine the effects of clinical mentoring on patient outcomes.

Conclusions

Online small-group international clinical mentoring is an effective strategy to provide clinical mentoring to promote confidence and critical-thinking skills. This research could provide a viable model that increases accessibility to clinical mentors and fills a need within the profession